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Chanute, Octave, 1832-1910.

Correspondence of Octave Chanute: letters to Wilbur and Orville Wright, May 17, 1900 - Jan. 25, 1910.

Index of Octave Chanute
Letters to Wilbur and Orville Wright

May 17, 1900 - January 23, 1910

Originals are in the
Library of Congress

The letters from the Wright Brothers
to Mr. Chanute are not available
to the public by direction of Mr. O. Wright

Aeronautical Archives
of the
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New York
1944

Missing numbers refer to letters from Wilbur Wright to Mr. Chanute.

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May 17~ 1900

Mr. Wilbur Wright
Dayton O.

Dear Sir.

I have your very interesting letter of 13~, and am quite in sympathy with your proposal to experiment; especially as I believe like yourself that no financial profit is to be expected from such investigations for a long while to come.

You will find in the "Proceedings of the Conference on Aerial Navigation" a paper on "Flying devices" by G. C. Taylor, who tested much the same method that you propose. He having used a mast 35 ft high. See also in same book, of which I enclose a folder "Learning how to fly" by Duryea, and "A programme for safe experimenting" by Mouillard. You will also find in "Progress &c" an account of De Sanderval's experiments suspended to a rope, pages 158 to 161, and a discussion of various methods, pages 261 & following.

Hargrave experimented with aspiration kites suspended from a rope stretched between two masts, and it would be most interesting to endeavor to repeat the performance with a full sized machine. You will find the accounts in the "Aeronautical Journal" for April /98-Oct /98 and July /99. I send you the issue for April /99, which you can keep, as I have others. There is in the issue for Oct /98 an article by Prof Fitgerald who suggests "Experimental Soaring" by raising the machine as a kite, with several guide ropes which I consider quite feasible.

As for myself, I have always felt that restraining ropes were a complication which not only vitiated the results but might lead to accidents from rotation of apparatus or collision with supports, and I have preferred preliminary learning on a sand hill and trying ambitious feats over water. I send you a report of my gliding experiments which you may not have.

The two most suitable locations for winter experiments which I know of are near San Diego California, and St

James City, (Pine Island) Florida, on account of the steady sea breezes which I have found to blow there. These, however, are deficient in sand hills, and perhaps even better locations can be found on the Atlantic coasts of South Carolina or Georgia.

The accounts of Pilcher's experiments are scanty. They are to be found in "Aeronautics" which is now out of print, in the "Aeronautical Annual" for 1897, page 144, and in several issues of the "Aeronautical Journal." Also in newspaper clippings which have not much value.

If you have occasion at any time to be in this city, I shall be glad to have you call on me, and can perhaps better answer the questions that have occurred to you. I intend to make further experiments myself, when my business and means will allow. If you do not expect to come to Chicago soon, I shall be pleased to correspond with you further, and to have a more detailed account of your proposal.

Yours truly

O. Chanute.

You may find in McClure's magazine for June an article I have lately written.

Aug 14~ 1900.

Wilbur Wright Esq
Dayton, O.

Dear Sir.

I have your letter of 10th inst. You can obtain spruce from

Keith Lumber Co.
Cor 14th & Wood Sts.
Chicago

It should be sap wood, clear, straight grained and thoroughly seasoned; but as this is an Eastern wood I should judge you can get it to better advantage in Cincinnati.

I enclose a paper of mine, published last year in Germany, in which you will find (page 39) a recipe for the varnish which I have found the best. I have also used "Spar Varnish" but it does not shrink the cloth.

Yours truly

O. Chanute

(1900)

Nov. 23d 0

Mr. Wilbur Wright
Dayton- O.

Dear Sir.

I thank you much for your letter of 16~ which I have found deeply interesting, and I congratulate you heartily upon your success in diminishing the resistance of the framing and demonstrating that the horizontal position for the operator is not as unsafe as I beleived.

I shall hope to meet you, either here or at Dayton to obtain further details, and to compare calculations of lift and resistances. If your machine is not irrevealable I should much like to see it.

I have lately been asked to prepare an article for Cassier's Magazine, and I should like your permission to allude to your experiments in such breif and guarded way as you may indicate.

I need scarcely add that I shall expect with impatience the further letter which you announce.

Yours truly

O. Chanute

1900

Nov 29" 0

Mr. Wilbur Wright
Dayton O.

Dear Sir.

I have your letter of 26", and enclose two pages of my article (which please return with corrections) covering all that I have said about my own experiments, and what I have just added about yours. You can be alluded to by name, or as manufacturers, as preferred. The detailed accounts to be published by yourselves.

I make out that you have diminished the head resistance by 2/3 instead of by 1/3 as I indicated in the German article of April 1899 (page 41) which I sent you. I figure out the equivalent area to be:

For man	1	sq. ft. instead of	5	sq. ft. in my double decker
" framing	2.25	" " " "	4.02	" " " " " "
Making	3.25	" " total	9.02	" " " " " "
	2	lbs.per sq ft-------	2	lbs per sq. ft.
Resistance	6.50	pounds---------	18.04	pounds " "

This is a magnificent showing, provided that you do not plow the ground with your noses.

Yours truly

O. Chanute

(1900)

Dec 2^d 0

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I have your letter of 1^{st} inst. You are right in your computation, and the equivalent square feet of your framing is 3.25 sq. ft. I will make my paper read that you have reduced the aggregate head resistances about one half, and speak of you as "Wright Brothers," or "W. Wright & Bro." as you may prefer.

I tested the Lilienthal coefficients with models, and found them to agree closely. He experimented also with surfaces arched 1/40 and 1/25 and found them to produce greater drift than the 1/12 arches covered by his table. It is to this I attribute your greater drift. The size of the surface would make no difference, as the lift must be equal to the weight, and the only reduction would be in the speed of relative wind required.

I doubt whether the man endwise can be figured as exposing only 1/2 sq. foot, even if round-shouldered. I should call him 1 sq. ft.

Yours truly

O. Chanute

2642. Fifth St.
San Diego, Calif.
March 26~ 1901

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I am spending the winter in Southern California, on account of my wife's health, and have your valued favor of 19~ inst.

The convenient anemometer for field use is the kind with very light flat vanes. The best is made by Richard in Paris (metric units.) I have one of them, also a registering instrument graduated to British measures made in Liverpool. Both have been tested and are provided with a formula for corrections. I will lend them, either you like, when you are ready to experiment. You might procure for yourself a pressure guage as a check. The Robinson anemometer only gives averages, while you can get a Richard instrument which can be attached to a machine in flight.

I return home about April 16~.

Yours truly

O. Chanute

(1901)

May 15~ 1

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I have your letter of 12~ inst. When you send for my anomemeter please say which you want, as the English one is now loaned to Mr. Huffaker in Tennessee.

I quite approve of the dimensions of your proposed machine. The "lift" proper, i e: the support, is the same at a fixed angle of incidence whatever the extent of surface, only the speed varying, but the "head resistance" does vary and diminish with lesser speed.

My article was to have been out in "Cassier's magazine" this month, but has been delayed, as I surmise, by non arrival of some photos sent for abroad.

I am planning a trip East, and may be able to stop over and see you. When would be the best time.

Yours truly

O. Chanute

(1901)

June 22d 1

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I have your letters of May 20th & June 19th.

I will endeavor, within a very few days, to bring you the French Anemometer. If I cannot come I will send it by express. The instructions are in French, and may need explanation.

I sent you the article in Cassiers and am pleased that you like it.

Yours truly

O. Chanute.

Chuckey City, Tenn
June 29 1901

Mr. Wilbur Wright
Dayton O.

Dear Sir.

The mechanical details and connections of the gliding machine which Mr. Huffaker has been building for me are so weak, that I fear they will not stand long enough to test the efficiency of the ideas in its design. These are the following:

1° The use of paper tubes for the framing.
2° Jointing the whole machine so as to fold and unfold rapidly.
3° Fastening the cloth so as to vary its curvature automatically in accordance with the pressure.

If you were not about to experiment I should abandon the machine without testing, but perhaps it will stand long enough to try it as a kite, and to make a few glides from a height of 15 to 20 feet.

If you think you can extract instruction from its failure, I beg to make this proposition.

1° I will send Mr. Huffaker and his machine to your testing grounds at my expense, and pay his share of camp expenses.
2° He will assist you in your experiments, in exchange for your assistance in testing his machine. The latter I expect to be breif. [!]
3° If you think you will want more assistence, I will also offer to Mr. Spratt (the young man in Pennsylvania who is anxious to see experiments,) to send him down at my expense to serve under your orders.

Kindly advise me in Chicago of your decision and the time at which Mr. Huffaker should join you. He was for three years Prof. Langley's assistant, and is a trained experimenter, but lacks mechanical instinct. Mr. Spratt, as I told you, is an amateur. The machine here will be about complete in a week.

July 3d 1

Mr. Wilbur Wright
Dayton O.

Dear Mr. Wright.

I have your letter of 1st, and am much gratified with the consideration which you exhibit towards my share of expenses. I forward your letter to Mr. Huffaker. As you do not say at what time you would prefer him to arrive, or the route, I wish you would drop him a line concerning those points. Address E. C. Huffaker, Chuckey City, Tenn.

As to Mr. Spratt, I do not know whether he can go. He wrote me June 26th that harvest work was beginning to crowd him, and he would give up experiment for a while. I will write him to-day, and offer to defray his expenses. I will be compensated by the pleasure given to him, even if I do not utilize him hereafter. I think he is discreet concerning other people's ideas. Huffaker I consider quite reliable. I mention this as you told me you have no patents.

I have a letter from Carl E. Myers, the balloon maker, stating that a Mr. Whitehead has invented a light weight motor, and has engaged to build for Mr. Arnot of Elmira "a motor of 10 I.H.P. to weigh with supplies for 2 hours and accessories about 30 lbs as estimated." It is to be hoped that it will "mote." Mr. Myers talks of applying it to his Skycycle.

Kindly write me from Kitty Hawk, at what time you would prefer a visit from myself, and the best route. Also your address, so that I may write if my engagements interfere.

I think you will need a Clinometer, and if I find one down town, I will send it to you by express. Please accept it with my best regards.

Yours truly

O. Chanute

July 4‾ 1

Mr. Wilbur Wright
Dayton O.

Dear Sir.

I found the Clinometer I was looking for, which is most applicable to the lengths of flight I hope you will make, and sent it.

The maker calls it an Altimeter, and it is used as follows:

It is held in the right hand, and the sight directed through the tube to the point to be observed. The vertical limb being first unclamped it is moved until the bubble shows that its centre co-incides with the cross hair. The limb is then level, and is clamped with the left hand, when the angle can then be read off. I have found this instrument to give quite accurate results when carefully used.

Yours truly

O. Chanute

July 8^{-} 1

Mr. Wilbur Wright
Dayton O.

Dear Mr. Wright.

I have your very pleasant letters of 4^{-} & 6^{-}. I shall be glad to have a note from you after you reach Kitty Hawk, and to have the Post office address to which I may write, so as to advise you of Huffaker's & Spratt's movements. I do not yet know whether the latter can get away from his farm work.

Yours truly

O. Chanute

Buffalo
July 18ᵗʰ- 1901

Dear Mr. Wright

I am attending the Pan American Exposition and have your note of July 9ᵗʰ.

Mr. Huffaker must be with you now. Mr. Spratt writes that he will be through his farm work the coming week, and I write to him to join you about Aug. 1ˢᵗ. I will endeavor to join you at that date myself, but do not wish you to meet me at Nag's head, as I can get a conveyance there.

I hope you are meeting with the best of luck.

Yours truly

O. Chanute

Elizabeth City, N. C.
Aug. 13, 1901

Dear Mr. Wright

I have ordered from Fulmer your bill of groceries, to which I have added three cans of hash, to fill up the chinks. Also a lantern which you will find useful in getting about.

I am glad to note that you are having good weather to-day, and I wish you the best of luck.

Yours truly

O. Chanute

The grocery bill is to be enclosed with the goods, it comes to $5.39.

Aug 19 01

Mr. Wilbur Wright
Kitty Hawk N. C.

Dear Mr. Wright

While very busy with my own affairs I am yet thinking of your experiments and hoping they are progressing to your entire satisfaction.

It has occurred to me that you would get still flatter glides by making sure that the centre of gravity co-incides exactly with the centre of pressure, and possibly by decreasing the angle of your rudder to 4°. I have found it efficient at 3° when behind, and it should be still more efficient in front.

Please take plenty of snap shots. You will want them to illustrate whatever you write. Also, do not fail to test the efficiency on the stability of cutting holes in the apex.

Yours truly

O. Chanute

(1901)

August 23d 1

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright.

I have your welcome letter of 22d and am glad to know that you got through your experiments without accident. I think you have performed quite an achievement in sailing with surfaces wider than any which I dared to use, and on which a change of incidence by a wind gust would make so great a difference in the centre of pressure.

I send you a full set of all the photographs taken by my camera. Most of them are failures from various causes. They are numbered on the back. If you will say which you want, I will either have them printed for you or send you the films.

Also let me know what to remit $^{o}/c$ expenses.

Yours truly

O. Chanute

(1901)

August 29th 1

Mr. Wilbur Wright
Dayton. O.

Dear Mr. Wright.

I enclose a 12th photograph which was overlooked in the lot which I sent you on the 23d.

I have been talking with some members of the Western Society of Engineers. The conclusion is that the members would be very glad to have an address, or a lecture from you, on your gliding experiments. We have a meeting on the 18th of September, and can set that for your talk. If you conclude to come I hope you will do me the favor of stopping at my house. We should have the photos you want to use about a week before the lecture in order to get lantern slides. The more the better. Please advise me.

Yours truly

O. Chanute

(1901)

Sep 5th 1

Mr. Wilbur Wright
Dayton O.

My dear Sir:

I returned from Denver this A M. and have your letter of 2d.

The Secretary of the Society, and the Publication Committee are greatly pleased that you consent to giving the Western Society of Engineers a talk on the 18th. They wish to know:

1° What title to announce (one suggests "more gliding experiments," or "New gliding experiments."
2d If you will send your negatives to have slides made of such pictures as you want to show. We save 25 cts each when the negative is used instead of a photo.
3d May they make it "Ladies night?

You will have time to revise your paper after delivery, as the next issue of transactions comes out in October and the next after that in December. If portions are to be extempore, we will have a stenographer.

I also have yours of Aug 29th and will answer that later.

Yours truly

O. Chanute

(1901)

Sept 6th 1

Mr. Wilbur Wright
Dayton O.

Dear Sir.

I have yours of 6th.

The custom is to keep the room lighted while the speaker makes his introductory remarks, and then to turn the lights out when the pictures are to be shown; leaving a shaded light for the speaker to read by. Diagrams can be used during the introductory, or photographed to throw upon the screen during the illustrated part. The meetings are informal and the members attend in business dress. We will conform to your wishes in not making your address unduly prominent, and will decide as to the presence of ladies after canvassing the probable attendance. We generally have 50 to 75 members present.

Let me know which of my photos you want reproduced. I suggest 1, 2, 4, 5, & 12, also possibly 6.

Yours truly

O. Chanute

(1901)

Sep 15th 1

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I received your letter of 10th yesterday and the slides are now being made. I will procure and enclose a few cards of invitation to your address, in case you wish to invite some friends.

As our Superintendent at the tie works was away I have had to run them myself. This took all my time. He got back yesterday and I now take up your very interesting letter of August 29th.

I may not have time today to discuss all your computations, but I will take up a few of them.

1st Head resistance.

The most puzzling thing to me is the very low head resistance which you report. We measured the pull on our own unloaded machines in 1896, and got results confirming in a general way the estimate given by Mr. Herring. It did not seem to me possible that the embedding of the spars in the cloth, as you have done, (we did not do this), should so greatly have reduced the head resistance, but perhaps the sharp curve at the front has also some influence.

You say in your note 9: "The dynamic efficiency of the unloaded machine appears to be greatest at 10 metres per second. The reasonable inference would seem to be that at this point the drift & head resistance are equal, each being 7.5 lbs."

This seemed reasonable to me, but it was not proven I have just made some calculations to get at it otherwise.

Computations from Wright's tests.

No	Date	Angle	Metres per sec	Metres per hour	Pressure per sq.ft	Duchemin's Lift	Computed Lift	Weight Lbs	Duchemin's Drift	Computed Drift	Pull
1	July 30	10°	7.5	16.77	1.4	290 x 1.4 x 0.332	154	98	290 x 1.4 x 0.0585	23.75	18
	Assume	7°	"	"	"	" " x 0.238	97		" " x	11.79	
2	Aug 6	7°	8	17.89	1.6	290 x 1.6 x 0.238	110	98	290 x 1.6 x 0.0293	13.59	16
	Assume	6°	"	"	"	" " x 0.206	96		" " x	10.07	
3	Aug 6	5°	10	22.36	2.5	290 x 2.5 x 0.173	125	98	290 x 2.5 x 0.0.52	11.03	15
	Assume	[illegible]°	"	"	"	" " x 0.139	100		" " x	7.03	
4	Aug 15	13°	7	15.25	1.2	290 x 1.2 x 0.419	146	109	290 x 1.2 x 0.0971	33.79	23
	Assume	[illegible]°	"	"	"	" " x 0.332	115		" " x	20.35	
5	Aug 15	7°	11	24.59	3.0	290. x 3.0 x 0.238	207	109	290 x 3.0 x 0.0293	25.49	17
	Assume	[illegible]°	"	"	"	" " x 0.139	120		" " x	8.44	
6	Aug 18	5°	12.5	27.73	3.9	290 x 3.9 x 0.173	195	109	290 x 3.9 x 0.0152	17.19	20
	Assume	3°	"	"	"	" " 0.104	117		" " x	6.14	

The first thing which appears is that all the angles were over measured, and the lift is in excess, even by the Duchemin formula. I therefore assumed reduced angles which brought the lift nearer the weight, and from this new angle computed the drift. This brought it down below the "pull," which includes both drift and head resistance, and I figure the latter as follows:

Expt 1 - pull 18 - 11.76 = 6.24 ÷ 1.4 = 4.4 "equivalent square feet"
" 2 - " 16 - 10.07 = 5.93 ÷ 1.6 = 3.7 " " "
" 3 - " 15 - 7.03 = 7.97 ÷ 2.5 = 3.2 " " "
" 4 - " 23 - 20.35 = 2.65 ÷ 1.2 = 22 " " "
" 5 - " 17 - 9.44 = 7.56 ÷ 3.0 = 2.5 " " "
" 6 - " 20 - 6.4 = 13.66 ÷ 3.9 = 3.5 " " "

The average is 3.3 square ft, which for 10 metres pr second, or 22.37 miles per hour, gives 3.3 x 2.5 = 8.25 lbs, a gratifying agreement. If we add 1 sq ft for the man, (and it seems to me this is small enough) we will have at 24 miles per hour 4.3 x 2.88 - 12.38 lbs head resistance which agrees pretty well with the 10.4 lbs you have figured.

Estimates of Glide 3 - Aug 6˜ 1901

I cannot agree equally well with your estimates of this. You figure separately the angle of descent required to overcome the head resistance, and to overcome the drift, and then you add them together. You thus obtain an aggregate angle of 11°, which will lead to the following result:

Drift at 11°. - 290 x 2.88 x 0.0702 = 58.63 lbs.
Less portion you have assigned head resist˜ 10.40 "

Instead of 40 lbs you estimate, you have: 48.23 "

But even with the 40 lbs the dynamic results come out askew. 24 miles an hour is 35.2 ft per second, and the work done on the air is 40 x 35.2 = 1408 ft. lbs The speed over the ground is 19 ft per second and the angle 10°, hence 19 x sin 10° (or 0.17365) = 3.30 ft fall per second, and the work done by gravity comes out 240 x 3.30 = 7.92 ft lbs instead of 1408 ft lbs.

Moreover, if I understand you correctly, you seem to have taken the angle of descent as the angle of relative incidence. Now the machine falls 3.30 ft per second, and the speed is 35.2 ft per second, so that the "relative angle of incidence" would be:

$\frac{3.30}{35.2} = 0.09403$ or sine of 5° 23' instead of 10°.

To get back to this angle of 10°, which seems to fit the case with the Duchemin formula, we have to assume that the machine made a further angle of about 4 $1/2^{\circ}$ with the relative wind, and was thus horizontal itself. This agrees fairly well with the photographs.

I have tried to figure out this glide with the Lilienthal co-efficients, but they do not fit at all.

I note what you say that the speed of greatest efficiency is between 31 & 32 miles per hour, yet the glides of August 9th were at relative speeds of 31 to 36 miles per hour, and were no flatter.

I will figure out my own glides, and discuss them with you when you come to my house. Please let me know by what train to expect you.

Yours truly

O. Chanute

(1901)

Sep 15 1

Mr. Wilbur Wright
Dayton O.

Dear Sir.

I send you herewith a copy of Lilienthal's chapter in Moedebeck's pocket book, which I have had made for you. Perhaps you may get a different understanding of his mode of calculation than Mr. Herring and myself obtained.

If you will let me know by what train you are to arrive Wednesday, I will meet you. If not, come right up to the house with your baggage. It is desirable that you should be here some time before the meeting, which takes place at 8 P. M. in order to look over the slides &c.

Yours truly

O. Chanute

(1901)

Sep 25 1

Mr. Wilbur Wright

Dear Sir.

I learn from various sources that some of the Engineers were much interested by the address which you gave us. When will you give us the manuscript. Do not be afraid of making it too technical.

Since you were here I have received Mr. Huffaker's notes taken during your experiments. Shall I send them to you?

In looking over an old number of the "Revue de l'Aeronautique" I find that after describing his machine as containing 14 square metres (151 sq ft) with an arching of 1/12, it says:

> "Experiment showed that in calm air, the wings being practically horizontal, it followed a trajectory inclined 9° below the horizon, with a velocity of 9 metres per second (20.12 miles pr hour.) Previous experiments of Mr. Lilienthal showed that for similar surfaces, with an angle of 9° the vertical component of the air pressure was 0.80 of the pressure on the same surface, struck at right angles with the same speed. Admitting for the pressure the formula. $P = 0.13V^2$, where all is expressed in Kilograms, metres and seconds, we find in this actual case a vertical force of 118 Kg, while the whole weight, machine and aeronaut was really 100 Kg."

Now 100 Kg is 220 lbs, and if the reported glide is correct we have with Lilienthal's formula.

Lift - 151 x 0.79 x 20.13^2 x 0.005 = 241 lbs.

While by the Duchemin formula

Lift - 151 x 0.30 x 20.13^2 x 0.005 = 101 bls.

Now, this seems to corroborate Herring's statement that he descended in calm air at a trajectory of 10°, with a speed of 22 miles an hour, and the puzzle remains why all the glides approximate an angle of 10° irrespective of the wind velocity. Can you throw any light on this.

Yours truly

C. Chanute

Sep 29$^{\text{th}}$ 1

Mr. Wilbur Wright

My dear Sir.

I have your letter of 25$^{\text{th}}$ I send you herewith Huffaker's book. Please return it to me when you have done with it, and fill up such gaps as exist in his notes as you abstract it, as I have yet made no use of them.

There is a further paragraph in the "Revue Aéronautique" which I had omitted, it is as follows:

> "With the same data, the horizontal component of the reaction is stated at 5.5 Kilograms." (121 lbs). Admitting the same formula ($P. = 0.13V^2$) for the pressure, and the speed of 9 metres per second, this would be the reaction obtained by a plane of 0.5 square metres (5.38 sq ft) moving at right angles to the air. This normal plane would thus be the equivalent, as to resistance, of the surfaces in movement, aéronaute and machine. This amount, of 0.5 metres, seems rather probable."

This seems to agree with both your measurements and your computations pretty well, but not quite. Please examine again the data about Bretonniere's stork. I think you will find the speed to be 44.7 miles an hour instead of 22, and the weight 1.08 lbs per square foot instead of 0.71 lbs.

I am glad that you are about to make a test of the correctness of Lilienthal's co-efficients. I have only one suggestion to make, i e: to make exchanges in the places occupied in the quadrant by the respective surfaces, as Dines found discrepancies arising from the "aspects" of surfaces.

I think I called your attention to the test of Aug 8 (pull not measured) when the angle of the machine was 14 1/2° to the horizon & 24° to the relative wind, both of which give wild figures in a wind of 10.8 metres pr sec$^{\text{d}}$ = 24.1 miles an hour and pressure 2.9 lbs per sq. foot. If the angle had been 8 1/2° with the relative wind we would have:

Lift - $290 \times 2.9 \times 0.285 = 240$ lbs.

Drift $290 \times 2.9 \times 0.0429 = 36$ "

Yours truly,

O. Chanute

(1901)

Oct 10th 1

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I have read with very great interest your letter of 6th and greatly esteem your ingenious experiments on air reactions. I can find no fallacy in your methods. I find however that Lilienthal's coefficients were obtained in natural wind, which he claims to give much greater values than for the same surfaces driven in still air. I am endeavoring to get a blue print of his plate VII to enclose in this letter.

Whether there is any other cause for the discrepancies you have found, I will now proceed to enquire. I have in past years gathered some materials on air resistances, and these will be at your service.

I will tomorrow write you at greater length, as I find I cannot get the blue print today.

Yours truly

O. Chanute

(1901)

Oct 12th 1

Mr. Wilbur Wright.

Dear Sir.

I have read with very great interest your letter of Oct 6th and I esteem greatly the experiments which you have lately made. I hope that you will continue them as proposed and advise me of the result.

I have been endeavoring to account for the discrepancy of your results with those of Lilienthal, and I think I have found one possible explanation. I send you a blue print of Lilienthal's Plate VII in which he has plotted the results of all his experiments. You will note that those made in "Natural wind" from which he derived his co-efficients, are greatly in excess of those made with the same surfaces with a whirling apparatus, and that your own recent experiments belong to the latter class, i e: surfaces driven against still air.

It seems to me that there may be a difference in the result whether the air is impinged upon by a moving body, or whether the wind impinges upon the same body at rest. In the latter case each molecule, being driven from behind, tends to transfer more of its energy to the body than in the former case when the body meets each molecule successively before it has time to react on its neighbours. This conjecture seems to be sustained by an examination which I have just made into the methods by which the co-efficients of air pressures have been found to vary from 0.00492 to 0.0033 by various experimenters. Those who found the higher co-efficients seem to have experimented with natural wind (Rouse, Smeaton, Duchemin,) and those who got the lower co-efficients (Hazen, Dines, Langley) seem to have experimented with whirling tables. I have believed for years, however, that some discrepancy was due to the fact that the formula for direct pressure ($P = KV^2S$) may not be in proper forms to represent both the pressure and the rarefaction. That it should consist of two terms, as explained in the enclosed old clipping of mine.

You will find in "Engineering News", March 14" 1895, a paper vy Lieut W. H. Bixby giving the various co-efficients which have been found. I think that LangleyIs is too small, and note by the way that 0.005 in miles per hour corresponds to 0.12 in metres per second (not 0.13)

Please notice that in the diagram curve 1 represents the values found by Lilienthal in experimenting in natural wind, measuring the angle with the horizon, but as he had found an ascending trend of the wind on the plain where he made his experiments, of about 3 1/2°, he corrected his results to curve 2, from which I believe he got his co-efficients. Both these curves are way outside of your results. I have put down three of the latter by a pencil point surrounded by a circle ⊙, and these seem to indicate that you obtain results analogous to those of Lilienthal in still air. It remains to be seen what you would get in natural wind, curve 3 being obtained with the same surface as curve 2.

I have plotted in a pencil line the co-efficient for the Duchemin formula. Please note how much they differ from Lilienthal's curve for the plane.

It is possible however that Lilienthal's method for measurements in the wind was at fault. I enclose a paper by Obermayer, which please be sure to return, in which he claims that Lilienthal so hung his surfaces that the resultant of the pressures was forward of the point of attachment and thus exhibited a propelling component which did not exist. As Obermayer, however, starts with the assumption that the resistance of the air is proportional to the first or second power of the sine, while we know that for planes it is proportional to $\frac{2 \sin x}{1+\sin^2 x}$ I have not accepted Obermayer's conclusions, but I would like to have your own opinion about it. He admits the greater carrying power of arched surfaces, does not say how much, but denies the tangential component. I hope that it has been reserved to you to settle this intricate question by experiment. I would like you to insert a table of the co-efficients you are about to obtain, for various angles, in your paper before the Western Society of Engineers. We would then print some separate copies and send them abroad to those who are interested in the question.

When sending you the translations from the "Revue de l'Aéronautique" I had forgotten that substiancially the same data are given by Lilienthal in the "Zeitschrift fur Luftschiffahrt" which is translated in my book, see pages 288-289. See also Pilcher's statement page 146 "Aeronautical Annual" of 1897, that a speed of 25 miles an hour & 30 pounds pull will float 220 lbs. This seems to confirm Herring's statement, page 63 that a pull of 32.19 pounds and a speed of 22 miles an hour will float 178 pounds on a surface of 134 square feet.

Yours truly

O. Chanute

(1901)

Oct. 20th 1

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

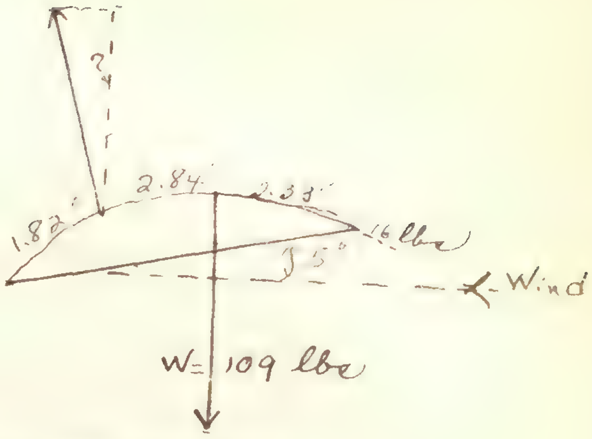
I have yours of 16th & 18th, together with the books sent by express.

You make a very strong argument in favor of the reversibility of air impacts,ie: that the pressure generated by driving surfaces against still air should be the same as those obtained by exposing fixed surfaces to a current of wind. Yet not only are there on the other side the considerations I mentioned in a former letter, but since writing this former letter I have found in Marey's late book, "The flight of birds", that he also undertook to measure the resistance of air. Believing that the lower co-efficients which had been found by some experimenters were due to marginal losses of the plates; he arranged to measure simultaneously the increased pressure at the front, and the rarefaction at the back, and arrived at a co-efficient of 0.13 kg per square metre.

As you are experimenting with the air moving, presumably with the same characteristics as natural wind, it seems to me that 0.13 metric will be the safe co-efficient for you to use. Your argument against its application to Lilienthal's & to Herrings computations for calm air seems however unanswerable.

You have satisfied me that Obermayer is probably right in his criticism of Lilienthal's experiments. I had forgotten that I had raised the same point in criticizing Phillip's experiments (Page 167. Progress), but this raises the question whether your own measurements of lift and drift are not vitiated by the same oversight? Say test no. 3 - Aug 16th. The centre of gravity I understood to be 1/3 from the front or 2.33 feet. The weight was 109 lbs. The centre of pressure

of a 1/12 arched surface, by Spratt's figures at 5°, was 26 °/o from the back, or 1.82 ft.



Now, if these data are right, what corrections should be applied to the pull (16 lbs) and to the lift?

Kindly advise me whether at anytime you measured the pull with a man on the machine. You may have noticed in Huffaker's notes, Aug 16$^{\text{th}}$: Weight 240 lbs Angle 6° to 6 1/2° - Speed 13 metres pr sec$^{\text{d}}$ pull 16 lbs. Rising trend of wind 2°. I marked an interrogation point opposite the weight, but you have not corrected it, if erroneous.

Please advise me also of the date of the Weather Bureau pamphlet on "Anemometry" so that I may get it.

I regret to say that I do not understand the construction of the instrument with which you expect to measure the lift and drift. Can you have a fuller description sent to me.

I am very much pleased that you have undertaken these experiments, and I will be glad to contribute to the expense if you will let me do so.

To answer your question about Lilienthal's apparatus I had a copy made for you of the partial translation sent me by Langley. I now send it with the book itself, and shall be glad to have such further translations as you may obtain. What does he calculate in Section 40?

Yours truly

O. Chanute

(1901)

Oct 25 1

Mr. Wilbur Wright

Dear Sir.

I have taken off the hands of the Society of Engineers the lantern slides used in illustrating your address. They will be very much at your service should you wish to give a talk to your neighbours.

I have a set of the old reports of the Aeronautical Society of Great Britain, and will be glad to give them to you if you will accept them.

Yours truly

O. Chanute

(1901)

Oct 27 1

Mr. Wilbur Wright
Dayton O.

Dear Sir.

I have your valued letter of 24th. The view which you take, that the time spent in aeronautical investigations is a dead financial loss, is eminently sagacious and wise. I feel that way myself, and the only method by which I have avoided neglecting my business has been to take up aeronautics intermitently; getting very rusty between times.

Your recent improvements in gliding machines have, however, disturbed my belief in co-efficients which I thought well established, and I desire to settle the matter in my mind before I again put it in abeyance.

I am glad to have your account of the precautions you took to measure the resistance of your apparatus, but I wish to enquire how you calculate the lift, say of test No. 6 August 16th, in the light of your recent experiments.

I have tried to compute it with the co-efficient you find for "Plin's curve 3 x 3 without ends" - 22 1/2 °/o but cannot make the figures balance.

I think I told you that I had written to Russia to enquire into the original history of "Plin's curve". Dr. Berthenson, who first called my attention to it, refers me to Marey's book and I there find that J. Pline (not Plin) did not originate a cross section for wing surfaces, but experimented with artificial butterflies which he dropped from a height. He also made an artificial wing of bamboo and it is the handle of this which my Russian correspondent seems to consider "Plin's curve". It has been experimented with as a cross section of wing by Hargrave, and is figured in Merrill's paper in the Aeronautical Journal for July 1899.

Yours truly

O. Chanute

On what page of the type written copy, is Lilienthal's statement where he allows .05 of initial [normal] pressure as drift at 0°.

(1901)

Nov 10" 1

Mr. Wilbur Wright,
Dayton, O.

Dear Mr. Wright.

I thank you for your letter of 2d and appreciate that it was a task to write a long one in the midst of other occupations.

I have been unable to get my anemometer tested here. I went to the weather observer, but was told there were no facilities for doing so accurately. Was advised to send the instrument to Washington, and ask Mr. Marvin to test it accurately on the whirling machine. I am in correspondence with him. Would you object to my sending him a record of your glides? I also have a copy of his "Anemometry", which adds still another to my collection of co-efficients of air pressures ($.004V^2$ in miles per hour.) This collection comprises 40 or 50 co-efficients, varying all the way from 0.0027 to 0.0054 which latter is that of Lilienthal. They vary as much as the coefficients for oblique pressures.

I begin to see however how it is possible to account for some of the differences. Marvin gives a factor $\frac{B}{30}$ for the correction to be made for altitude, but I suppose it should be made as well for barometric changes, in the same locality. He does not mention thermometric changes, but I now remember that some 15 years ago Wolff published a book on Windmills, in which he gave a table of air pressures (based as he admits on incomplete data) as affected by temperatures. For a speed of 25 miles per hour, for instance, these pressures vaired from 3.36 lbs per sq. ft at 0° F. to 2.76 lbs pr sq ft at 100°; the former corresponds to a coefficient of $0.0055V^2$ and the latter to $0.0044V^2$, the formula $0.005v^2$ corresponds to a temperature of 32°F. I suppose that the factor which really affects the pressure is the density, whether the result of temperature or of the atmospheric column, but as your experiments were conducted in a warm place, I believe we may accept the Marvin formula $P = 0.004V^2$ in miles per hour; this corresponds to $P = 0.00186V^2$ in feet per second.

I beg that you will accept my copy of Lilienthal. I happen to have a sum on deposit with a book dealer in Berlin, and I wrote him some days ago to send me another copy. Also all of Lilienthal's magazine articles which I do not have already. I also ask your acceptance of a set of the reports of the Aeronautical Society of Gt. Britain. I regret that report No. 2 is missing, being out of print when I bought the set. I have also found among my old papers a nearly complete set of "Aeronautics" which I send, and a number of pamphlets and magazines of which I possess duplicates. These I forward by express to serve for winter reading.

Nov 12th 1901

Since beginning this letter I have received one from Prof Langley, in answer to one of mine of some weeks ago. I enclose it herewith and beg that you will return it when you have absorbed his data for a surface very similar to yours. It is as he says "confidential" i e: the data are not to be published.

I believe the Resistance R is given in grammes, but have written to make sure. It is rather unusual to get RV in "feet-grammes."

I have put down some figures in pencil. You will notice that the edge resistance affects the drift very materially at the smaller angles, and this, as I took it, was the factor which made Lilienthal's curves of pressure start back of the origin of Abscissae.

The column which will interest you is that of per centage of lift to the rectangular pressure, the latter is arrived at by computing the pressure by the formula $P = 0.00186V^2$ in feet per second, which corresponds to $P = 0.004V^2$ in miles per hour, and this pressure is used as a divisor for the 0.551 pounds (250 grammes) which were sustained. If I had used the formula $P = 0.005V^2$ I would have obtained materially smaller per centages of lift to pressure; so that when Lilienthal measured his Normal and computed its per centage of $0.13V^2$ he reduced the co-efficients that he would have obtained with a lower factor.

In the last column I have undertaken to get the Normal by dividing the lift by the cosine of the angle of

application. You can get the per centage which this bears to the rectangular pressure by dividing by the total computed pressure on the surface (1 sq foot or $0.0929m^2$) which I have set down in the first column, but I do not feel sure that by what he termed N , Lilienthal did not mean the lift alone, not to be reduced by multiplying by cosine of angle. Note that at 3.6° Langley gets five % of pressure.

I shall be glad to know how your new experiments on surfaces agree with Langley's. In the little chart you sent me Oct 6*, the lift of "Pline's curve" without ends at 5° = 0.225, same reversed, without ends = 0.01 - Lilienthal's curve without ends = 0.38 and same with ends = 0. 45 while at same angle Langley gets = 0. 47 with what is virtually Pline's curve.

Yours truly

O. Chanute

*⌈i.e. Oct. 16.⌉

(1901)

Nov 16th 1

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

I have just received your letter of 14th and answer at once your question about illustrations. I think 5 to 8 pictures will illustrate your own glides. I enclose a set of my own photos, and will make still better prints of such as you may select if you will send back the films I loaned you. I should be glad also to have another set of your own photos.

I believe you are right in concluding to do no more than to allude to your recent experiments in your paper for Western Engineers. You should prepare another paper on your recent results. How would you like to include this in the continuation of Lilienthal's chapter of Moedebeck's pocket book?

I fear Langley will not favor republishing Lilienthal in English. I would if I could get a good translation.

What is the distance between the surfaces of 1901 machine?

Yours truly

O. Chanute

Nov 18th   1

Mr. Wilbur Wright
    Dayton O.

Dear Sir.

I have your letter of 17th, and will see Mr. Warder about your address.

It is perfectly marvellous to me how quickly you get results with your testing machine; the checks on Langley's curve (which I will multiply by 0.95) having been sent almost by return mail. You are evidently better equipped to test the endless variety of curved surfaces than anybody has ever been. I hope that you will do so, and tabulate the results as you go along, for the temptation to omit this is always strong. I have two sets of sections of bird's wings; one set as they are when spread out, Aer. Annual 1897, p.117, and the other as I suppose them to be when under pressure in soaring. Both are at your service.

Answering your question about my glides: those on page 42 Annual "Avery 253 ft 10 1/2° & Herring 239 ft. - 11°", were made Sep 4th/96 in a 15 mile wind, and all the rest in the table were made Sep 11/96 in a 31 mile wind.

It seems to me, however, that the co-efficients of lift which you are getting now are going to grin at the tests which you made with the full sized machine. I have just completed and sent to Marvin two tabular statements to puzzle over. I send you copies of them. In No. 1 "tests", you will note that, discarding pressures produced by formulae $.005V^2$ and $.004V^2$ (columns 7,8) and taking Marvins figures (col. 11) purtaining to his anemometers, I get a rectangular Normal (col 12, being col 9 x col 11) which is used as a divisor into the weight (col 10) thus giving the percentage of lift (col 13) at that angle, compare this with 14 & 15, Lilienthal & Duchemin. I believe that the partial agreement with the latter is misleading. In any case test No. 2 disagrees with No. 5 and test No. 3 disagrees with No. 6. I wish

you would have the data compared with this table to make sure that I have made no mistake. Please do the same for statement No. 2 "Record of glides." I have felt reluctant to tackle it until the data for statement No. 1 were settled, as I think the angle of incidence differs from the angle of descent.

Yours truly

O. Chanute

(1900)

Nov 27th 1

Dear Mr. Wright.

I have your letter of 22d & 24th, and first will give you the news.

I have a letter from Mr. Langley, saying the drift or "R." of his table of June 24th/97 test, is in grammes; "V" & "R", although in different units, being multiplied for obtaining comparison of products.

He asks for data as to your glides. I send him a copy of the Record (No. 2) but not of the tests in the wind (No. 1), as we doubt the Anemometer. I take the opportunity to suggest the publication of the Lilienthal book in English by the Smithsonian.

I have a letter from Marvin, which I enclose herewith (to be returned), and I send him both of my Anemometers to be tested. I also advise him as to the wind allowances which you suggest, and return herewith the duplicates of the data sent him, with the corrections in pencil. The distance glided Aug 9th No. 5 (280) and the angle of descent (10°) were, as I think, correctly given to Marvin, but I made a slip in your copy.

I have a letter from Berthenson of St. Petersburg. He says that Colonel Feodoroff, who has paid special attention to Lilienthal's experiments, says "that his co-efficients cannot be accepted as correct." Berthenson, by the way, goes back on Pline's curve.

I have a letter from Major Moedebeck. He sends me a note from Prof Wellner, who says that: "In relation to the data of Lilienthal, I may be allowed to state, according to my experiments, that they are not to be trusted, although the arched surfaces, comparing them with plane surfaces, have an advantage, which may be more or less according to the path or aspect." Moedebeck also sends a note from Engineer Samuelson, said to be an expert, who says: "Normal pressure of the air against the wings of a bird, flying with uniform and horizontal velocity (independently of the angle of inclination with which the air impinges upon the wings), is,

$$N = \frac{y}{g} \times \frac{3}{4} \times F \times V^2$$

"In which y = about 1.2 kilograms (density)
g = 9.81 metres (gravity)
F = Surface of wings & tail in square metres
V = Velocity of flight in metres.

"Lilienthal believed that he might omit the factor of 3/4 for arched wings.

"The natural law which is contained in the above equation was discovered by myself, and it was proved both experimentally and rationally, see "Zeitschrift für Luftschiffahrt" 1896, pp. 90 & 218"

I make out that the above comes to:

$0.09173V^2$ for metric units.
$0.008809V^2$ " British units & miles per hour.

Major Moedebeck also says that he wrote to Lilienthal's brother at Berlin, but after waiting 14 days, had heard nothing from him; he proposes to write me again as soon as he hears from Lilienthal's brother, but now thinks the co-efficients in the "pocket book" can be contested.

What Moedebeck originally asked me to do was to bring Lilienthal's Chapter VIII up to date, by stating what has been done since 1895. When I wrote that your experiments invalidated the Lilienthal co-efficients, Moedebeck proposed that I should write an entirely new Chap VIII. To this I demurred as belittling Lilienthal, and proposed that his chapter should be reprinted, that Moedebeck should add an account of his death and labors, and that I should contribute notes on Pilcher's, Hargrave's, Herrill's, Chanute's, Herring's & Wright's experiments, to add about half as much as chap VIII now. I had intended to sign my initials only. Now, I will either prepare the whole of the notes, including your experiments, or prepare the notes up to the latter point, and let you describe your own work, as you may prefer. Please let me know.

I think the notes should include a rectification of the Lilienthal co-efficients, but not a full statement of your present experiments, both because you will want to prepare at your leisure an exhaustive account of your experi-

ments on models, if they prove as valuable as I now anticipate, and because in giving a foreign publication the first fruits of your investigations, it would not be well to go into much detail.

I may mention in this connection that I have been correcting the proofs of your address to the Western Engineers, and that it is a devilish good paper, which will be extensively quoted. I have added the three illustrations you asked for.

I send you blue prints of my wing sections, 1st the natural wing & 2d the wing flattened. I send two copies of each, so that you may have one to cut up.

I am amused with your apology for writing long letters, as I find them always too brief.

Yours truly

O. Chanute

(1201)

Dec 11˜ 1

My dear Mr. Wright.

Answer to your interesting letter of 1˜ inst has been delayed by a little trip which I had to take to Iowa, to look after my interests.

The flattening of the wings, to which you refer, was purposely carried to an extreme, to show the remaining lobe in front. I believe with you that there remains in flight a slight curvature in the back.

I am very glad that the Lilienthal table has risen in your esteem, both because I feared that I might have led others astray by publishing it, and because it was hard to believe that his glides should not have disclosed to him any serious error. I send herewith translations of a letter received yesterday from Moedebeck, enclosing one from Lilienthal's brother, who says that the resistances in the glides coincided exactly with those obtained in their joint measurements. My translator is not an expert, and you will find a blank, above which I have placed the original german word. Please return the letters.

I quite agree with you that it will be preferable to give in Moedebeck's handbook the co-efficients for a surface differing markedly from Lilienthal's, and to emphasise the necessity of considering shape. Please furnish me the necessary data and comments when you consider that you have arrived at such deffinite results as to warrant publication.

I am not surprised that you should find a greater Normal and greater lift at intermediate angles than at 90°, but I am surprised that you should find it at 30° - 35°. - Dines found it at 55° for square planes, at about 50° for a concave surface, and about 20° for a convex surface. Have you his papers to the Royal Society of June 1840 & May 1891? - See De Louvrie's formula -

Of course you bear in mind that the normal is only an aggregate resultant of distributed pressures and their moments. This is alluded to in a long letter from Marvin, which I enclose herewith, and which please return with your comments at your leisure. I will discuss the subject with him, but not finally before I hear from you.

I think you will like Marvin's methods. He resolves the forces along the path, as you do, while I have hitherto resolved them vertically & horizontally. He however has to distinguish between true drift & false drift &c, and gets stuck between glides just as I do.

I do not quite like his nomenclature. The tangential is a propelling force, and what he terms edge pressure I have hitherto called head resistance. He applies the latter name to the whole resistance, and he also calls it "true drift" in another place.

I have not yet taken time to consider his paper in all its bearings, but this seems to me a good time to settle upon the best methods of measuring and computing glides, and to agree upon terms of deffinition. Then I will send these to Moedebeck to be translated, and included in his Aeronautical lexicon.

Yours truly

O. Chanute.

(1901)

Dec 19‾ 1

My dear Mr. Wright

Upon my return from Detroit, (whither I went on wood preserving business,) I have read your letter of 14‾(!) with absorbing interest. If your method and machine are reliable you have done a great work, and have advanced knowledge greatly. Your charts carry conviction to my mind and your descriptions and comments are very clear. I must especially commend the system by which you went about to ascertain the best form of surface, instead of trying hap-hazard experiments.

I very much regret in the interest of Science that you have reached a stopping place, for further experimenting on your part promises important results, yet my judgment cannot but approve of your decision, for I see as yet no money return for the pursuit, save from possible exhibition. If however some rich man should give you $10,000 a year to go on, to connect his name with progress, would you do so? I happen to know Carnegie, would you like for me to write to him? In any event, while the thing is fresh in your mind, I hope that you will prepare a paper at your leisure, so that your discoveries shall not be lost to others. I would take pleasure in presenting such a paper either to the Western Society of Engineers, or to the American Association for the advancement of Science, of which I happen to be a member.

I perceive that instead of publishing one table of Normals, lifts, drifts and tangentials, as Lilienthal did, you will need to publish a table for each form of surface and aspect. This will involve considerable figuring, and if I can help you in this respect I shall be quite at your service.

And, by the way, how much do you now think we had better give Moedebeck?

I enclose a letter from Prof Langley giving his reason for not publishing Lilienthal in English. As it was my understanding that the Professor does not read German,

I did not think that the supervision of a translator would involve much labor for him. His own book has been practically ready 3 or 4 years, and I sometimes have felt that he was keeping other students back by not printing it.

Speaking of printing, reminds me to tell you that I have ordered 300 reprints of your paper which comes out in the December transactions of the Western Soc^y. Eng^s. One half is to be sent to you, and I will distribute the remainder among my foreign and domestic correspondents.

I have written Marvin, giving him a good reason, as I think, for the existence of a tangential force, and proposing some changes in his nomenclature. We must first agree upon the classification, definition and name of the forces in action, and then discuss how they are to be applied. I think his letter to me contained the rudiments of a correct solution of the problem, but that there were blemishes and omissions such as generally occur in a first draft. I will send you his answer when received, and also a copy of my own letter to him should there be occasion therefor.

I think of going to California in about 10 days.

Yours truly

O. Chanute

Jan^y 1st 2

My dear Mr. Wright.

I have been working on my retiring address to the Western Society of Engineers, and unable sooner to answer your valued letter of Dec 25^d.

I shall be very glad to have your comments upon the Marvin papers, (from whom I have heard nothing more, yet,) and to discuss the best way of computing glides. I am delighted to hear that you "get lost now and then," I do also.

I would be willing to defray the expense of publishing Lilienthal's book in English, if I could get gratis an adequate translation.

I will gladly assist in figuring up the results of your experiments. I propose now to start for California on the 8th, and to remain till the 1st of March. I shall have nothing to do there, but to sun myself, to get up the article for Moedebeck, and to compute your data. You may send me a first batch before I leave, and the balance later, to 485 Maylin St Pasadena, Calif, which will be my address.

You are eminently right in saying that there is a limit to the amount of neglect which a business will endure. I discovered that in 1897, when after spending some $10,000 in experimenting and assisting others to experiment, I found some danger of losing the business which gave me bread and butter. Since then I have been more cautious, yet there may be circumstances which will warrant greater activity. I learn confidentially, - and I tell you under same restrictions, - that the Directors of the Exposition at St Louis, are even now descussing a project for making the research of Aerial Navigation a prominent feature of that show, which they also talk of postponing till 1904. The plan suggested has been to enter into communication with Mr. Deutsch and Mr. Santos Dumont, to provide a navigable balloon, and to offer a number of prizes, the first of $50,000, for the best performances of various classes of aerial apparatus. Of course, this may come to nothing, or it may

take such shape as to hasten a solution. I shall be glad to know how this news strikes you, and shall meanwhile take no steps to enlist rich men in the pursuit. The only reward that I have seen to offer them, so far, has been to give their name to the first successful apparatus, in the hope that it would stick to it in the future.

I wish you a happy and a prosperous year. May every thing turn out as you desire. Please remember me to your brother.

Yours truly

O. Chanute

Jan 8^{-} 2

Dear Mr. Wright

I have your very interesting letter of 5^{-}, and will take it with me to read more carefully.

I am delayed by business, and will leave here Sunday night, the 12^{-}. My address will be 485. Maylin St. Pasadena, Calif.

The Newspapers say that Langley & myself are to go to St Louis to confer with the Exposition authorities, but the Press know more than I do. I have received no letter from the Exposition people. Perhaps one is in the mail.

I send a letter from Huffaker, which please return after you have smiled. I will send him the tracing of the "Pline's curve," but the joke about it is too good to give away just now. I will wait & see what the sec^{y} says.

Yours truly

O. Chanute

I will write to the sec^{y}, to endeavor to get a small appropriation for Spratt.

St. Louis,
Jan 13" 1902

My dear Mr. Wright.

I received your recent letter before leaving Chicago, and came via St Louis on request of the World's fair people.

They propose to appropriate $200,000 in promotion of aerial navigation. One main prize of $100,000, under terms and conditions which are to be formulated $50,000 in minor prizes and in aid of inventors who may have meritorious projects but no money, and $50,000 in general expenses, balloon sheds, hydrogen making stunts &c &c, for most of the talk hitherto has been about balloons.

It is proposed to have an international commission of 8 or 10 members to formulate the conditions to be met and these are to be neither so severe as to preclude the possible winning of the cheif prize, nor so easy as to reward a performance which shall not be worth $100,000 to the world.

The project is as yet indeffinite but correspondence is to be opened and entervieves held with various parties to find what suitable persons are willing to serve on the consulting commission.

The purpose seems to promise a series of dignified contests, and destined to advance science, without despising the gate receipts.

Would you be inclined to compete?

Yours truly

485 Maylin St
Pasadena Feb 6th 1902

My dear Mr. Wright

I have your letter of Jan 19th and am very much interested in the description of your pressure testing machine.

I send you herewith a table of 4/3 sines (co-sines of complements) and of the rectangular pressures of your surfaces, which I have computed in the intervals of getting up the paper for Moedebeck, from whom I had a letter hurrying me up. I had come to quite the same conclusion as yourself, ie: that it would be unwise to give the public full information as to the properties of curved surfaces at present, and I wrote him that the article would not contain your data. It seems a pity however, and now that I am writing that part which relates to co-efficients, I am half inclined to give those for 2 surfaces, say no. 10 & no. 15. Please let me know your own judgment, and what surfaces it is best to give, if any.

I meant to write at length as to your analysis of the forces in action, but must postpone to another time. I have heard nothing from Marvin since December. St. Louis commission is not yet appointed.

Yours truly

O. Chanute

485. Maylin St
Pasadena. Cal. Feb 13th 1902.

My dear Mr. Wright.

I enclose herewith a copy of the continuation of Lilienthal's chapter VIII, which I have prepared for Moedebeck, and shall be glad to have your suggestions. I am not satisfied with the mathematical portion. The omission of your data led me to follow Lilienthal's method and notation and I may have erred.

I send a letter from S. H. Hollands, you can answer him direct or through myself as you prefer.

I have a letter from Capt Ferber, of Nice France, who has made some glides himself on a Lilienthal machine. He says that he is in a State of Admiration of your performances and wishes me to convey his felicitations.

I have also heard from Means, from Cabot, from T. P. Ferguson, from Banet-Rivet, from C. E. Myers and from C. Edwards to the same effect. They seem to have recognized my hand writing on the envelope.

Yours truly

O. Chanute

485. Maylin St
Pasadena, Cal. Feb 19th 1902

My dear Mr. Wright

I have your letters of 7th & 11th. I herewith return the sheet of lifts of surfaces no. 1 to 17 corrected, and that of no. 18 to 43 computed, as well as the table of 4/3 sines. These are for you to keep, as I have kept copies, upon which I will enter such corrections as you may indicate.

I was going on next to compute the "Resultant Pressure" but I have struck a snag. - You say:

"To find the Resultant pressure when "Lift" is known, divide the lift by the cosine of the angle found by adding the tangential to the angle of incidence"

"Example - Find the Resultant pressure no. 9 at 10° Lift at 10° = 0.839 - Cosine (10° + (-3°) = 7° = 0.992" ——— Now the tangential of no. 9 at 10° is (-3.3/4°) so that the Resultant pressure = $\frac{0.839}{0.944}$ = 0.844 instead of 0.845 as you have it.

The difference is of course trifling, but raises the question whether the error is in the rule or in the taking the wrong co-efficient in the example. I feel pretty sure that it is the latter, but thought best to ask.

You do not say what other elements you desire me to compute. Please do so, and state which formulae you would propose to use. My present uncertainty arises from the fact that you have given me the "Rectangular pressure" which does not appear in your formulae, and termed it "false lift". I infer that you intend to have it stand for the true lift, by considering the whole system rotated so that the "Relative wind becomes horizontal, but I am not sure.

My recent letter, containing a copy of the article for Moedebeck, answers the considerations you expressed concerning a present publication of your data. I think you should work them up at your leisure, to be put in print when opportune.

This will involve giving very accurate drawings of the surfaces experimented, in order to be of service to others. I should be glad to have a set, full sized, myself, when convenient.

I am very much amused with your account of the turmoil caused by the St. Louis prizes among the flying machine inventors I am missing all that fun, as our local papers do not republish it.

Yours truly

O. Chanute

485 Laylin St.
Pasadena, Calif. March 4th 1902

My dear Mr. Wright.

Mr. C. H. Lamson, of kite fame, formerly of Portland, Maine, has been in California all winter. He now runs a jewelry and watch repairing shop at "Long Beach," some 20 miles from here, but talks of selling out.

If he does, he says that the new business he expects to engage in (outdoor photography), would leave him leisure to build a folding gliding machine for me, to test my proposed rocking surfaces. He has patented a method (U. S. Pat N° 666.427. Jan 22^{d} 1901 - "Kite") which I think possesses merit, and I am inclined to try it.

Which of the various surfaces you have tested would you advise me to adopt, and how many would you advise me to superpose?

I also propose to rebuild my "multiple wing" and my "two surfaced," so as to have comparative tests when you go out again. Could you build these at my expense in your shop? I propose to keep the man upright.

Yours truly

O. Chanute

485 Maylin St.
Pasadena. March 4~ 1902

Dear Mr. Wright.

I have your letter of 19~ & 25~ ult~ I think you are quite right in the emendations which you propose in the text of my article for Moedebeck. It is my impression that one of Langley's experiments showed the centre of pressure on a plane to be 1/5 back from the front at 0° of incidence, and that it is not at all improbable that at the same angle it is 99 °/o back from the front on an arch of 1/12 rise, because of the pressure on top at the front, but it is much safer to be indeffinite and I will correct the article as you suggest. I sent it on for translation a few days after I mailed you copy, but will send on the corrections later.

I am considerably annoyed and ashamed at having erroneously filled in the blanks left by the type writer in the article, and regret the confusion which I caused you. That confusion I shared myself when I came to revise the formulae. My intention was so to frame them that they should apply both to surfaces moved horizontally at a positive angle to the horizon by a propeller, and to gliding surfaces at a negative angle propelled by gravity, the forces in both cases being resolved horizontally and vertically. For this purpose I first assumed the chord to be horizontal, (in which case the angle i would be 0°) and then to oscillate either above or below the horizontal, the weight in the latter case having a propelling component sufficient to overcome all the resistances. In other words I have supposed the inclined plane of air tilted sufficiently to bring the forces into equiponderance. Please advise me whether you see any inaccuracies in calculating in this way, and what formulae it is best to give; also, should I not add an example.

I will now go on computing the "Resultant pressures", the "Retarding pressure" and the "gliding angle" - Have you any preference as to the way in which they are to be tabulated.

Yours truly

O. Chanute

485 Raylin St
Pasadena March 21st 1903

My dear Mr. Wright.

I have just received your letter of 23d and I think your criticism of Mr. Marvin's paper very sound. I have since had another letter from him, a copy of which I have had made for you. The pencil notes indicate my answer. I rather think that I will go to Washington this spring and would like your permission to show Mr. Marvin your letter.

I have been asked by the Exposition people to be in St Louis about April 13th to meet Santos-Dumont and to discuss with others the conditions which should be laid down for the Aerial contests. I think I shall go. If you have occasion to write to me please address me in Chicago, unless your letter is mailed before the 5th of April.

I have just been talking with Lamson about a folding gliding machine. I am minded to use 4 surfaces, double segments - 20' x 4', and to try surface Nº 25. so that I would like the exact shape of the latter. I now have only a sketch.

Yours truly

O. Chanute

(1902)

May 5 2

Dear Mr. Wright

I am much touched by the words of sympathy which you send me in my affliction.

I laid my dear wife by the side of her mother at Peoria on the 23d of April, and I am endeavoring to regain my mental poise.

I thank you for writing to me.

Yours truly

O. Chanute

([illegible])

May 5 2

Dear Mr. Wright.

I found yours of April 12th here upon my return, on the 24th, but have since then had to go to Kansas City.

I hope to have leisure to pay you a visit, after pressing business matters are disposed of, and we can then discuss the "point of pressure" and the merits of different surfaces.

Lamson is building a folding machine for me of which I shall ask your acceptance as well as the two former types which I expect to have rebuilt. I think I will not experiment any more myself, but I desire you to test the comparative merits of what I have done in the hope that you will get some good out of it.

I return the French letter, which is from Commandant Krebs, formerly associated with Colonel Renard. I have sent two copies of your address to Dr. Adams at Berlin. I have a card from Hargrave, who says that you are "one of the right sort."

Yours truly

O. Chanute

(1902)

May 13th 2

Dear Mr. Wright

Major Moedebeck wants to use geometrical drawings instead of photographs in illustrating my continuation of Lilienthal's chapter.

Have you drawings of your own machine? If so, and you do not object, please send them to me and I will have them copied and returned.

Yours very truly

O. Chanute

(1902)

May 27" 2

My dear Mr. Wright.

I have your letter of 16" - Last evening I had a call from Mr. Herring, who is out of a job and is urgent to be employed to rebuild the multiple-wing and the two-surfaced machines, in order to test them in comparison with your own. You may remember that you were to have these rebuilt for me when your regular work slacked up. How is it holding out, and what would you prefer, i e: to rebuild them yourself or to have Herring do it? There would be some advantage in having him rebuild the multiple-wing.

Please advise me; and also at what time you propose to experiment this year.

My own business is pressing on my time, but I still hope to pay you a visit soon.

Moedebeck will be anxious to publish drawings of your machine. If you see no objection and will make the drawings I will send tracings to him.

Yours truly

O. Chanute

It is a question in my mind how much you should give away.

(1902)

May 30th 2

My dear Mr. Wright.

I have your letter of 29th. I write this day to Mr. Herring offering him a price for rebuilding the multiple winged machine which I am to give you.

Concerning the double-decked machine I am in doubt. Mr. Herring has one which can be rebuilt at small cost, but then it would be his, and not yours. Please let me know how complete you would want the plans to be to set
it? See those in the of 1897, and in the British Patent N^{o} 15.221 - 1897, which I mail herewith. What would be your preference in the matter?

If you are to have leisure before July 1st, I would be very glad to go with you to the hills near Chicago, to have you judge of the safety of carrying on your experiments there. I expect, however, to visit you before that time, as I am getting my business in hand.

I suggest that you take out a patent or caveat on those principles of your machines as are important, not that money is to be made by it, but to save unpleasant disputes as to priority.

Yours truly

O. Chanute

The rules for Aerial contests St. Louis are nearly ready.

(1902)

July 3^{d} 2

Wilbur Wright

1127 West Third St Dayton Ohio

Do you prefer my visit to-morrow or next week.

O. Chanute

(1902)

July 17th 2

My dear Mr. Wright

I have your letter of 9th. You said "Tangents" and tangents I'll set down.

I have been over to S^{t} Joseph to see M^{r} Herring. He is putting excellent workmanship on the machine.

Your proposed programme seems to me excellent. My apprehension would be that you would give too much, instead of too little, care to the testing of the machines furnished by myself, and that it would be well to have one of my former aids to show you how we used them. I have called on Avery several times, but he was off yatching and I could not see him. I will try again. Herring is in correspondence with Maxim, and rather expects to go to him.

I send you my anemometers by express. I enclose a copy of Marvin's letter of May 8th, and also the modified conclusion of my article for Moedebeck, which please substitute for pages 8, 9, 10 & 11 in the former copy sent you.

I have written Lamson to ship to Elizabeth City, N C. Please let me know what time I had better come down.

Yours truly

O. Chanute

July 17 2

My dear Mr. Wright

Thinking over what you said about possible extensions of your business I have remembered two openings, from which I have heretofore thought that fortunes might be made. These are:

1°. A stove for heating carriages: to consist of petroleum flame playing on a cast iron ring enclosed in a perforated box let into the bottom of a private carriage or street car &c &c. I had two or three made twenty years ago, and they heated nicely, but there was a smell in consequence of bad joints.

2°. A domestic refrigerating machine to be attached to the refrigerator, and simple enough to be run by the cook. Some experiments have been made in this direction, as I happened to know ten years ago, but the machines were not simple enough, At the present price of ice they would be profitable if successful.

Should either of these subjects interest you I would be very glad to put my information at your disposal.

Yours truly

O. Chanute

(1902)

July 20th 2

My dear Mr. Wright.

I have your letter of 17th, and herewith return the French letter with translation.

I fancy that the Editor is not well posted and uses the term "Helicopters", which applies only to ascending screw machines, to cover all classes of flying machines.

Be this as it may, you had better refer him to Mr. Henri Hervé. N° 1 Rue Hautefeuille Paris, who has for some years been compiling a bibliography of books, articles & miscellaneous information on flying machines and balloons. He is the best man to prepare an abstract of whatever interests the Editor.

You can write him in English, and send him a full copy of your paper to the Western Society of Engineers.

Yours truly

O. Chanute

Translation

Technical Bureau
study no 146
mention this number
Specimen Article 8

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33 Boulevard des Batignelles
Telephone 147-09

Mr. Wilbur Wright
Dayton Ohio

Sir.

I have read with great interest the very interesting article which you have recently published in Fielden's Magazine of London, upon recent experiments in Aeronautics, and which we have lately noticid, giving it an important place, as you may see by the specimen which we send to you.

I am now seeking to know, (in order to avoid antericrities) the present status of Aviation, the question of Helicoptères (screw machines,) and in what consist the apparatus based on this principle, which have been patented during the last 20 years.

— Bibliography of the Helicoptère — Can you answer on this question, or indicate to me the sources of such bibliography, which I may search. Would it be possible for you to prepare for me a small summary memoir, but with ample references on this question, and to let me know what would be your conditions as to compensation and the time required. - In case this is not possible can you indicate to me some one who can do the work?

Accept, with my thanks, my very sincere respects.

The Technical Editor

Paul Renaud

July 29˜ 2

My dear Mr. Wright

I have your letter of 27˜ and enclose a letter from Merrill, and some photos from Lamson, which please return when examined.

You will note that the Lamson machine, without its tail, occupies 20 x 4 on the ground, and that the multiple winged occupies 17 x 12 with the tail. I suppose a shed, or a tent 22 x 24 would take both in, but Herring suggests, that as the machines can hardly be expected to last more than one season, it may be as well to store them out of doors. I am inclined to provide the shelter, as the machines have nice work on them, and you may wish to preserve them for further trial.

Merrill had written to me to get my endorsement for a prospectus to raise $500 for a method of imparting initial velocity to a glider through a falling weight. This I gave him, but reserved an opinion on the safety of the glider until I knew the plans. Hence this last letter. I made just such a design two years ago, but feared the overturning effect of differing pressures on the wings, and you know the efficiency of the section which he proposes.

Yours truly

O. Chanute

(1902)

August 9th 2

My dear Mr. Wright.

I duly received your favor of 31st ult° I enclose a letter from Lamson, which please return. The machine he is building had cost $284, up to the time he wrote. I have answered that if he ships it by August 20th, it will reach you in ^ useful to me.

I have not heard from Herring, and am writing him again.

I quite agree with you that experience is a much better guide than reasoning in the present state of the art; but I believe that you did not quite apprehend Herrill's idea in staggering his surfaces back. It is not so much to get an increase of parachute area, as to get better supporting power in glides, by avoiding interference of one surface with another in the rear. Both Kress and Maxim say they got good results from such an arrangement. I did not, but perhaps I had my surfaces too close to each other. I am glad that Herrill will try it once more.

Yours truly

O. Chanute

(1902)

August 26th 2

My dear Mr. Wright.

I have your letter of 14th inst. I learn from Lamson that the oscillating wing machine is nearly done, and it may be shipped by this time.

The multiple wing is finished and crated, and I have asked Mr. Herring to ship about Sep 1st. He has not heard from Maxim, somewhat to my surprise, and will probably be more available to help in testing the machines which I contribute than Avery. The latter said, when I spoke to him, that he could go away from his work here up to the middle of Sep but that his customers were back by Oct 1st, and he would needs be at home. What are your views and wishes in the matter.

I have a letter from Moedebeck thanking you for the intention to send plans of your 1901 apparatus. Are they gone?

I enclose a copy made for you of correspondence with Marvin, which may prove of interest.

Yours truly

O. Chanute

(1902)

Sep 6th 2

My dear Mr. Wright.

I have just received yours of 2^{d}, and note that mine of Aug 26th had not reached you. In it I mentioned that the Lamson Machine was probably shipped, but I have not heard from him to that effect.

The Multiple winged machine was shipped by $Amer^{n}$ Express to you at Elizabeth City N. C, Sep 4th. The charges are $\$11^{15}$ and I enclose my check for \$20.

I had an interview with Avery since I wrote you. He said that his customers are coming home earlier than usual, but that if he could get a good man to take his place, he might be able to get away about Oct 1. This seemed so doubtful that I have just written to Mr. Herring to know whether he can probably go with me to Kitty Hawk. I shall be glad to hear from you on the subject.

I hope you will be very careful in carrying on your experiments. It is better to accomplish little than to try for a great success at the risk of an accident.

Yours very truly

O. Chanute

(1902)

Sep 14" 2

My dear Mr. Wright.

I have your letter of 5–, received the 12". I also have one from Mr. Herring, who has not heard from Maxim, and says he can go to Kitty Hawk with me. I will arrange with him to do so, as Avery will be busy.

Let me know the exact day on which you will prefer our visit, not earlier than Oct 1", and what things we ought to bring for our own use in camp, as well as for you.

I have not heard a word from Lamson and am uneasy about the machine he was to ship.

Yours truly

O. Chanute

(1902)

Sep 28‾ 2

Dear Mr. Wright.

Your letters of 21‾ & 23d are just received, both together.

Mr. Herring and I have been planning to leave here, via "Big Four" & "Ches. & Ohio" Oct 1‾. This should put us in Norfolk to leave on the afternoon of Oct 3d for Manteo.

Do not however trouble to send a boat for us, as I dare say we can get put across on the 4‾. We will in any event wire you from some point on the Ches & Ohio to cover the contingency of the train being behind time.

We will bring blankets and canvass for hammocks. We will also call at the office of the boat at Elizabeth City for any letter you may wish to send me requesting the purchase of supplies for you.

Yours very truly

O. Chanute

Washington, D. C.
Oct. 16, 1902

Dear Mr. Wright

The general passenger agent says they do not extend excursion tickets and that, if you want to over stay the limit, the best way will be to purchase a new ticket back, and to send the unused portion of your excursion ticket to the general office of the issuing Road for redemption. That the remittance will reach you in a week, and that the effect will be that you will have paid full fares each way.

I have seen Marvin & Zahm, who both would be glad to see you if you come this way. Sect. Langley I saw but an instant as he was driving off when I called. He tells me I may hear some interesting news in a short time.

When you test the oscillating wing machine please test it carefully with a bag of sand to adjust the springs before you trust a man on it. The joints and wires are the weak points, and I would forego full tests if there was danger of any of you getting hurt.

I enclose a newspaper clipping from the Philadelphia Record of the 12th, giving an account of an accident in Paris.

I leave tonight for home.

Yours truly

O. Chanute

(1902)

Nov 5 2

My dear Mr. Wright.

I am very glad indeed to know that you are safe at home, with new laurels and no broken bones. The details of your achievements I want to know later.

I enclose a couple of letters from Prof. Langley which please consider confidential and return.

I have not heard from Mr. Herring since Oct 17, although I owe him for his return expenses from Washington, where I left him.

I enclose a letter from Hargrave, which please return. Can you help me to help him to the information he seeks about steam motors &c.

I enclose a set of the photos I took of your glides. Please indicate by No those of which you want more, and the number of each to send.

Since my leaving you I have made trips to S^t Louis, to M^t Vernon Ill, and to Kansas City, on business, so that I have not worked on your computations. I am glad to say that my financial interests have not suffered from my trip to Kitty Hawk.

Yours truly

O. Chanute

(1902)

Nov 15 2

My dear Mr. Wright

I have your letter of 12th, and herewith enclose:

1^{o}. Computations of your glides of Oct 8th for revision.
2^{o} Gliding angles & tangents. Laboratory experiments.
3^{o} " " " cosines, to serve in computing the Resultant pressures. If there are no mistakes in them, I will then make the computations.

I believe you had better complete the tables relative to the first set of experiments. This may cause some scientific body to defray the expenses of more experiments, for I believe you should not be burdened with this expense.

I think your photographs superb. They make me ashamed of mine. You do not say how many of the latter you want, so I am having some printed to fill your order when received.

I have engaged passage for myself and daughters in a steamer sailing Jan 3^{d}, from Boston to Egypt, and expect to be absent 4 months. Please advise me of what I can do for you before I sail. At what time will you have a paper prepared for the Western Soc^{y}. of Engineers? It is Welcome.

Yours very truly

O. Chanute

(1902)

Dec 6~ 2

My dear Mr. Wright.

I return the record of glides of Oct 8~, in which I have corrected the error which you detected, and crossed off glides no. 24 & no. 25, as probably incorrect. All the papers sent you were intended for you to keep. If you will advise me of any errors which you may find in the table of gliding angles and cosines, I will then compute the "Resultant pressures" and send you a copy of that to keep.

I infer that you will not have a paper prepared for the Engineers before I sail. I enclose a card of papers already provided for, and will arrange with the Secretary to correspond with you about subsequent dates, lantern slides &c.

I am having more prints made for you.

I mail seperately a copy of Mouillard's patents.

I see in the morning paper that Maxim is coming to this country to work out a flying machine. Would you like a letter of introduction to him?

Yours truly

O. Chanute

(1902)

Dec 9" 2

Dear Mr. Wright

I met last week Mr. Manly, Prof Langley's assistant, while on a visit to his brother and told him that I was going to Egypt.

This brings me the enclosed letter which seems to me cheeky. Kindly advise me what to reply.

I think you had better patent your improvements. How far do you think of carrying on aeronautical work?

Yours truly

O. Chanute

(1902)

Dec 19 2

Mr. Wilbur Wright
1127 West 3d St
Dayton O.

Dear Mr. Wright

Permit me to introduce Mr. Patrick Alexander, of England, one of the leaders in Aeronautical investigations, who desires to meet you while in this country. I feel sure that you will be as much pleased to make his acquaintance as I have been myself.

Yours truly

O. Chanute

Dec 21‾ 2

Dear Mr. Wright

I have yours of 11‾ and have transmitted your message to Prof Langley except the last sentence.

You say "Possibly you have noticed the mention contained therein of the Maxim & Lilienthal machines."

Now I had not noticed the mention, and I have just now gone over the paper, without finding it. Where is it?

I quite approve of your answer to the invitation.

I am very glad to learn that you are going to experiment further and that you are going to patent.

Yours very truly

O. Chanute

(1902)

Dec 29th 2

My dear Mr. Wright

I have your letter of 28th and also the Anemometer, which I wish you had kept.

Not having received from you a corrected sheet of gliding angles & their cosines, I have had the Resultant pressures computed with the figures which I already had, and herewith enclose them. This completes, I believe, all the computations which you originally asked me to make, and which I have been an unconscionable time in getting out.

I also send you another set of my photos, which I have had printed on cyko paper to match your own.

I leave here on Wednesday, and sail from Boston January 3d, on the steamer "Commonwealth" for Alexandria. I enclose a copy of our itinerary, and would be very glad to have a letter from you. I will probably drop you one myself. I make all sorts of good wishes for your success and prosperity, and hope to call on you next May.

Yours truly

O. Chanute

Nice, le March 7, 1903

My dear Mr. Wright.

In Nice I met Captain Ferber, of whom I spoke to you, who has been trying experiments with a machine similar to yours. It is rudely made by a common carpenter, and he has made but 8 glides with it, the longest being about 150 feet.

Moreover he has an abominable practice ground, it being a series of rocky slopes (?) with precipices above and below. He has accordingly built what he calls an "aerodrome" with a mast 59 ft. high and a rotating arm 98 ft. across, running on ball bearings. This is shown on pages 58 & 59 of the pamphlet which I now send you, and is to serve in testing various forms of apparatus with motors. He now has a gasoline engine of 6 H.P. which weighs complete, with the shaft, inside of 200 lbs. and estimates that the screw or screws will weigh about 22 lbs. more. He is now looking up the best and lightest construction of screws, and is to let us know what he finds out.

He says that he is not trying to invent a new system, but simply to experiment the best that others have designed, and is much of the opinion that you are ahead of all others.

He says that he is much inclined to go to America to take lessons from you, and that he wishes to purchase your 1902 machine, as well as the oscillating wing machine built by Lamson, if you will sell them, deliverable either now or next October when you go into camp again.

I do not think he will learn much with his aerodrome, as the suspending rope will vitiate all the results, but there are sand hill (?) on the Western coast of France where he might transfer his experiments.

Please let me have your views, as to the sale of the machines and the giving of the lessons. I think I can get an answer from you in London Care Thos. Cook & Son, as I now expect to be there from April 2d. to April 24, at which time I expect to sail for America. If not in time to write to London, please address me in Chicago.

We have thus far had a very enjoyable trip. We spent 10 days in Egypt, and then went to Naples, Rome and Florence before coming here. We now go to Milan and Venice, where I will leave my daughters while I run to Vienna and Berlin in behalf of the St. Louis Exposition, to join my daughters in Paris on the 22nd and remain till April 1st.

I hope that you and your brother are very well, and have made more progress since I have left. I hope to see you soon after my return, and present my best respects.

Yours truly

O. Chanute

I wrote you just before I left, I have received no letter from you.

Grand Hotel, Vienne
March 13, 1903

My dear Mr. Wright.

I wrote to you from Nice, and received in Milan your letter of Feb. 4th, advising me of your experiments on the resistance of various shapes to air currents. It fortunately happened that I had just formed the acquaintance that day of Mr. G. Canovetti, an Italian Engineer, who has been experimenting at Milan upon the resistance of various solids, and has won several prizes, as well as received two appropriations of $200 each from the Smithsonian Institution for his researches in aerodynamics &c.

I gave him your address and he is to mail you two memoirs; one in French and the other in Italian, so that if you are at all rusty in those languages you had better brighten up. Most of the tables, however, consist of co-efficients, with the shapes shown in the margin, so that I think you will make out.

I left Venice last evening with the sun shining brightly and reached Vienna this morning in the midst of a furious snow storm. I am to meet to-morrow Mr. F. Von Lõssel, an Austrian Engineer who has made a great many experiments on air resistances and will probably mail you a copy of his book, so that you may want to brush up your German also.

To day I spent with Mr. Kress who experimented with a flying boat last year. You may remember that pictures of it were published at the time, and that it came to greif; turned over and sunk, upon the first trial. It has since been rebuilt, and I went out to see it to-day. It seems to me to possess some excellent points in construction, and that it may actually fly if a motor lighter than the present one can be obtained. The latter is a Daimler weighing some 70 lbs. pr HP. and a law suit is in progress between the builders and the inventor. Some of the facts which you give as the results of your experiments are puzzling to me, and we will go over them together when next I see you. I now expect to sail for home between the 15th & 25th April.

With best regards to your brother and yourself, I remain

Yours truly

O. Chanute

April 4, 1903

Dear Mr. Wright

Your experiments are attracting a good deal of attention in Paris. I have had to give several talks, and to promise to write something for publication. L'Aérophile wants your picture and that of your brother Orville to publish with the article I have agreed to prepare. You are therefore upon the receipt of this to go to the photographer and be "took," and to send me two copies of each at Chicago, where I expect to be on May 8th to 10th; sailing on the Kronprintz Wilhelm from Southhampton on the 29th of April.

I know you to be so modest that you will demur, but the thing is not to be avoided, as the editor was very particular. I wish to please him, because he has now apologizes for having allowed a correspondent (some years ago) to call me a theif in his columns, and, as a token that I bear no ill will I have agreed to have my own picture taken, and to "look pleasant"--

You might as well get the photographer to print at my expense a lot of pictures from your negatives. There is a run on them, I have given out most of those I had with me.

It seems very queer that after having ignored all this series of gliding experiments for several years, the French should now be over-enthusiastic about them. The Germans and the English have taken more notice, and it does not come as a surprise to them that men actually take toboggan rides on the air. Our friend Mr. Patrick Alexander came over from London to hear me spout, and sends his best respects to you. He says that when I get to London (which I expect to do on the 10th) I may effect considerable good for the attendance on the St. Louis Exposition, which is the chief subject of my talks, and the main object of my present stop in the French capital.

I have just ordered an Anemometer Richard which I will bring back with me, and send to you with my compliments

With best respects to you & Orville

Yours truly

O. Chanute

London, April 11/03

Dear Mr. Wright.

I have yours of March 29 upon my arrival in London.

I read between the lines that you contemplate some further improvement upon your 1902 machine, and do not wish to dispose of it to Capt Ferber until you are certain of the result. If my imagining is correct, I think that you are right.

In any event he would not decide to take the trip until he thinks it over more carefully. I have advised him of what you say, and we will talk it over when I see you.

I was very kindly received in Paris, and am just getting in touch with the English aeronauts.

With best regards to Orville.

Yours truly

O. Chanute

London, April 18, 1903

Dear Mr. Wright.

Just before I left Paris Capt. Ferber advised me that he had rebuilt his apparatus and was about to use it from a higher mountain and to attempt longer glides. I at once wrote and telegraphed to dissuade him, and now have a letter which I translate as follows:

"April 16/03

"Dear Sir.

I have heeded you and have made no glides on the mountain. To-day I receive your letter of 11th and I note that Mr. Wright cannot build me a machine until next winter. This does not matter, for I care for only one thing: it is to receive lessons from him and to make a few glides upon his favorable ground. Ask him whether he is to go this year to Kitty Hawk, and whether he sees any objection to my coming to see him and to take lessons from him. If he consents we can discuss on the ground the purchase of a new machine.

I beleive that it will be reasonably easy to obtain leave of absence to go to America; but we must always reckon upon the possible caprices of the military authorities.

Yours very truly

Capt. Ferber
17th Batterie Alpine
Nice, France"

If you think it best, you can write to him direct, for he reads English, although with some difficulty, or we may talk it over when I see you, and I will then write to him.

I have engaged passage on the North German Lloyd "Kronprinz Wilhelm" which sails from Southampton on the 29th.

I am getting in touch with British Aeronauts, and finding out what is going on. Having already done so in Italy, Austria, Germany and France, I shall have a good survey of the whole field. I do not now beleive that any nation is ahead of our own.

Yours very truly

O. Chanute

Chicago. May 15" 1903

Dear Mr. Wright

I reached home on the evening of the 9", and now have yours of 11", which I am glad to get.

I have an Anemometer for you, and a lot of miscellaneous information which I can best deliver in person. I have engagements until after the 21". Please advise me when it will be convenient to you to have me call.

I am ashamed that men whom I have praised so highly in Europe should have so little courage to face a camera. Go and do so right away and have the pictures ready as well as the photos.

The Secretary of the Western Engineers told me to day that he wished to set a date for the reading of your paper, and desires to know what Wednesday will suit you best.

Give my best respects to your brother

Yours truly

O. Chanute

May 21ˉ 3

Dear Mr. Wright

I have yours of 18ˉ. Mr. Warder tells me that he will put down your paper for June 17ˉ or June 24, and that he has written you about it.

I will be detained here to attend the funeral of my brother in law, who died in California, and is to be buried in Peoria. I will advise you further when I can visit you.

Yours truly

O. Chanute

June 7/03

Dear Mr. Wright

I send you herewith by Express, the various publications by Mr. Maxim on his flying machine, save those you have in the Aeronautical Annual.

Also an envelope containing such notes as I have filed away at Sundry times concerning screws.

Also Andre's book (in French) on dirigeable balloons, in which chapter III is devoted to screws.

You will find below the memorandum you asked for concerning the power of Santos-Dumont motor.

Yours truly

O. Chanute

Memorandum

Power of Buchet motor used by Santos Dumont.

In a paper by Mr. Armengaud to the French Society of Civil Engineers, published in its Bulletin for December 1901, it is stated that the Normal power of the motor was 16 H. P. but might be increased to 18 H P, this varying with the regularity of the carburation. That the thrust of the screw varied from 154 to 165 lbs., when tested "au point fixe"., and that by applying the formula of Col Renard, this ought to have given a speed to the balloon of 22 miles per hour. That by consequence greater resistance than in the balloon "La France" the speed attained by Santos-Dumont was 19.01 miles per hour

(1903)

June 14" 3

Dear Mr. Wright

In looking over the Photographs which you kindly gave me, I do not find your portrait nor that of Orville - Please send them, so that they may go with my article.

Did I send you two of your invitations to the meeting in London. Here they are.

Yours truly

O. Chanute

June 30 3

Dear Mr. Wright

Not hearing from you, I have written to Capt Ferber that his statement that the Flying machine must not be permitted to be completed in America, and that he is building a motor machine, have put a flea in your ear, and that you are thinking.

I am writing an article for the Revue Générale des Sciences. Should the warping of the wings be mentioned? Somebody may be hurt if it is not.

How much fictive area do you allow for the head resistance of your machine? I figure the real area at 20 sq. ft , and the fictive at 6 sq ft.

If you have one of your computations of a glide to spare, please send it to me.

Your paper is recommended for publication in the August number of transactions of Engineers, thus giving it precedence over anterior papers.

Is it best to send Langley a copy of my paper for the Aérophile, or let him wait till it comes out in print?

Yours truly

O. Chanute

(1903)

July 8 3

Dear Mr. Wilbur Wright

I have yours of 2^{d}, and the copies of "Flying". I knew the number for January was short, and had sent for two copies. They have arrived, so that I put one in the file and send you the other to keep.

I have completed the paper for the French Review and will send you a copy in a few days.

What I desired to know is how you compute your glides. I have made a number of computations, (using however 0.004 as co-efficient of air resistance) and they indicate that your head resistance and area are more than stated by you. I will make a copy of these within a day or two and send them to you.

I am sorry that you did not keep Drzewiecki's paper longer. Can you suggest the best way of getting it published and discussed by those who know the subject. I notice that the Marine Engineers seldom discuss fully the papers read before them.

Yours truly

O. Chanute

(1903)

July 12th 3

My dear Mr. Wright

I send you herewith a copy of my article for the French paper. You will readily identify the 10 photos I sent of your glides.

I enclose also a revised schedule of some of the glides of Oct 8th/02, in which I have corrected the wind speeds as per Marvin's rating of the Anemometer.

I have been trying to decompose the various elements of the resistance, i e: Drift, Tangential and head Resis^{ce} to agree with the observed facts of angles and speed, and find that they do not agree very well.

The first discrepancy is in the speed. You say that your apparatus needs a relative speed of 18 to 20 miles an hour for support but all the observed speeds are greater than this.

The next discrepancy is in the head resistance you say that it amounts to 3 or 4 pounds at 20 miles per hour, but you give 8/3 as the effective area, and using 0.0033 as co-efficient of air resistance we have $\frac{8 \times 20 \times 0.0033}{3} = 3.52$ lbs; while you said at Kitty Hawk that the head resistance was 30 °/o of the whole, which on 30 lbs. would amount to 9 lbs on this basis the effective area would be $\frac{9}{1.32} = 6.81$ sq ft. It is my impression that the latter figure is more nearly correct than the first

I think this can be determined by computing individual flights from the actual observations and working backward from the propulsion. In doing this I will use your own coeff of 0.0033

Take glide N° 10 - Oct 8th. Speed 26.68 miles per hour. Pressure per square foot $26.68^2 \times 0.0033 = 2.35$ lbs. Angle of descent 6° 20' + 2° of chord = 8° 20'

Assume angle of incidence of wind 8°. As I do not know the co-efficient of lift of your surface I have to compute the Normal - backward.

Normal 251.5 lbs x cos 8° or 0.99 = 254 lbs
Drift 254 lbs x sin 8° or 0.139 = 35.30 lbs
Tangential 305 sq ft x 235 x -0.035 (Lilienthal) = -25.08 lbs
Omitting head - Leaves net resistance 10.22 "
But the propulsion is computed at 27.74 "
Hence left for head resistance 17.52 "

This gives equivalent area $\frac{17.52}{2.35}$ = 7.4 square feet

I would be glad to have the computations of glides 10. 12. 17. 18. 19 & 20, in which we guessed at the angle of the chord with the horizon, if you have made any of them.

Yours truly

O. Chanute

(1903)

July 17th 3

My dear Mr. Wright.

I have your letter of 12th, and thank you very much for the table of average results of your glides. Please advise me for what particular surface they are calculated?

I have also that of 14th and thank you for corrections I will write to the Revue des Sciences to change the depth of curvature to 1/25 of breadth -

Kindly advise me as soon as possible:

How is the vertical tail operated?
I fear that it will not do to strike out the clause altogether, and you did not desire that the working of the wings should be mentioned at all.

I will later on write to you concerning the computation of glides.

Have you seen that Prof Langley is about to test his man-carrying machine?

Yours truly

O. Chanute

July 20~   3

Dear Mr. Wright

Answering your letter of 14~, I beg to say.

1~. I do not know whether any of the records of Lilienthal's glides have been preserved, but I gathered the impression in Berlin that they had been destroyed after his death.

2d I gave you some years ago a record of our 1896 glides, with the speed of the wind added, but they are imperfect in there being no observation of the angle of the machine above or below the horizon, and so can only be very roughly calculated.

3d. I fully agree that in order to compute a glide accurately the speed, angles, course and wind should be uniform. You may remember that we proposed to measure those data, but did not.

4~ Not having the speed at starting, rate of acceleration, maximum speed, rate of retardation, speed at landing and path of undulations, you did very wisely in computing the average performance of your machine by angles as given, but I think this method leaves something to be desired, and may lead you astray when you come to drive your machine at higher speeds. I desire to compute the lift, drift, tangential and head resistance in pounds, and do agree that the computation of an ordinary glide will lead to errors of 50 per cent. I believe that when there is no great variation in wind speed the other elements (retardation, acceleration &c) will equalise themselves, and that the foot pounds due to the descent will be pretty well accounted for. Perhaps as closely as in the table you have sent me.

I notice in the latter that, with 305 square feet of surface, the lift varies from 238 to 244 lbs. while the weight was from 251 1/2 to 260 pounds. That the per cent of Normal and the tangential do not co-incide with those of any one of your surfaces, and that the loss due to superposing,(which ought by rights be included in the co-efficients for surfaces) varies in an unaccountable manner, being

smallest at 1° and at 8°, and greater at intermediate angles and at less speed than the maximum.

I shall be glad to have your views, and one computation of a glide which you think to comform with the requirements you lay down.

Yours truly

O. Chanute

July 23^{-} 3

Dear Mr. Wright

I have your of 22^{d} but it does not answer the question "how is the vertical tail operated?" Or rather how do you want me to say that it is operated?

You will understand that I forwarded the paper to the Revue some time ago, that it is in English and is to be translated in Paris. I have to write at once to get the corrections made before it gets into print.

You will understand also that I desire to comply with your wishes, but that I cannot send off corrections without substituting something.

Yours truly

C. Chanute

1903

July 27th 3

Dear Mr. Wright

I have your letter of 24th. I have written to the "Revue" to change on Page 11. - 41 to 34 - 1/20 to 1/25 - on page 12 to suppress the word "Piano" - and on page 14 to suppress entirely the last sentence beginning 7th line.

I was puzzled by the way you put things in your former letters. You were sarcastic and and I did not catch the idea that you feared that the description might forestall a patent. Now that I know it, I take pleasure in suppressing the passage altogether. I believe however that it would have proved quite harmless as the construction is ancient and well known.

The use of the word "twine" was an inadvertence, I indicated on the manuscript that it should be translated by the word "cordelette" which means a line of any sort, and "line" is the proper word.

I suppose that you did not know that I had already mailed the article, and that time was an object.

Yours truly

O. Chanute

July 28" 3

Dear Mr. Wright.

I enclose herewith two photographs, and the translation of a letter from Captain Ferber, received this day.

You will find on the back of the larger photographs the data about weights &c.

You can keep the translation of the letter, but I should like the photos back when you have done with them.

Yours truly

O. Chanute

(1903)

August 17 3

My dear Mr. Wright.

I duly received yours of 2d inst. and have been busy with tie preserving.

I send herewith a synopsis of the glides of 1896 with the Double Decked machine, in the shape in which I understand you to want them. The speed of the wind was measured at the top of the hill only, and only once or twice. There was a zone of calmer air about half way down the hill, which latter was rather abrupt.

I have a letter from "L'Aérophile" asking for photographs of yourself and brother, together with "a few biographical notes for insertion in the series of portraits of contemponeous Aeronauts" I know both of you to be so modest that I believe that this request will be most unwelcome; yet you may conclude to furnish the information. The paper generally publishes about a page of notice with each portrait. Please advise me.

I have been intending to take up some of the points made in your last three letters, but found that other engagements prevented.

Yours truly

O. Chanute

Record of Glides with Double decked Machine

1896

Date	Operator	Length feet	Time Seconds	Angle Descent	Height fallen	Wind miles per hour
Sep 4	Avery	253	——	10 1/2°	46	15
" "	Herring	239	——	11°	46.3	15
" 11	Avery	199	8	7 1/2°	34.6	31
" "	Herring	234	8.7	10°	30.4	31
" "	"	220	9	——	——	31
" "	"	235	10.3	——	——	31
" "	Avery	256	10.2	8°	35.5	31
" 12	Herring	359	14	10°	62.1	25

The wind was 22.3 miles per hour (uncorrected) in the forenoon of Sep 11, and measured 31 miles per hour, (uncorrected), in the afternoon, at which time the glides with the double decked machine were made.

The wind on Sep 12, measured 25 miles an hour (uncorrected) and was gusty.

The test of the Anemometer in 1902 indicated that its readings should be multiplied by 0.81 to get the true velocity.

(1903)

August 27th 3

Dear Mr. Wright.

I have your letter of 23d. I will advise the Aerophile that you decline to be written up at present, but I hope that you will accomplish such success that you will no longer be able to resist the pressure for portraits and biographical notices.

I, like yourself, had 153 reprints of your paper printed, and have sent off about 2/3 of them, almost wholly to parties in Europe who had asked me to keep them posted.

I regret to learn that you are delayed in your start for Kitty Hawk. If you have time to write me please advise me on two points:

1°. What supporting area do you use in figuring you 1902 machine? I suppose that you allow something for the rudder.

2°. What form of the surfaces experimented with conforms most closely to the co-efficients given by you in your tabular statement of July 12/03 The column no. 3. (°/o of Normal to support) does not seem to agree with any of the "Resultant pressure," which I figured out a year ago.

Yours truly

O. Chanute

(1903)

Sep 3d 3

Dear Mr. Wright.

I have your letter of Aug 31st and thank you for the information furnished. I send you a letter from Merrill, which please return. I have written him that I have no cross-section of your surfaces, as I refrained from taking any measurements of your machine, but I have given him your address. I hope that he has really devised such an apparatus as he claims.

I have been kept quite busy with wood preserving matters; no less than four Railroads talking of having plants for treating ties built and operated by me. I am about to go over the line of some of them to look up suitable locations, but nothing may come of it after all.

I regret to hear that the total weight of your machine will approximate 675 lbs. I am so much interested in your continued success that I wish you had planned a lighter and more easily started machine, even at the risk of having to go a little faster through the air. Ferber's machine weighs 495 lbs. with 586 ft of surface 0.85 lbs for sq. ft, and I figure that he needs a speed of 24 miles an hour, at 2 1/2° incidence

Yours truly

O. Chanute

(1903)

Sep 12th 3

Dear Mr. Wright.

I have yours of 8th inst. Mr. Cabot, of Boston, bids me to congratulate you, and I send you his letter, which please return.

I also send a translation of a letter from Capt Ferber, which you can keep. I have not received the paper to which he alludes but fancy the text is not important.

I have a letter from Mr. Alexander, saying that he expects to be in this country the last week in October. He told me in London that he might go to Japan. Have you heard from him? I have not led him to believe that he would be welcome to see your experiments, and nobody knows from me what you propose to do this year.

I am really sorry for Langley. He has had more than his share of mishaps, and the pesky reporters are giving him the reputation of a bungler.

I have here a little nest of dishes and cups for camping purposes. If it can be of use to you it is very much at your service.

Yours truly

O. Chanute

(1903)

Oct 7th 3

My dear Mr. Wright.

I duly received your letter of Sep 19th and I just got that of Oct 1st.

I am very much pleased; first by the inference that none of your material was caught in the fire which destroyed the Railroad freight house at Elizabeth City, and next at what you have accomplished in hovering flight. This is great as a beginning and I hope you will next turn a full circle in soaring, as a preliminary to your more ambitious projects.

I begin to fear that I will not be able to visit your camp this year. Some of my business has gone wrong, one of my managers of works is down with typhoid fever, and I have several calls to go over various lines of Railroads to gather data for possible contracts. One of these is for the 21st of October and following week.

Pray keep me advised of your scheivements and projects, and I will come and see you if I can compass it.

Best respects and compliments to your brother.

Yours truly

O. Chanute

(1903)

Oct 24th 3

Dear Mr. Wright.

I have your letter of 16th upon my return from Southern Illinois, and it is with very pleasant excitement that I learn of your success and expected future developements.

The delay in your preparations may enable me to be present at your trials. I now expect to leave here on Nov 1st. and to go to Washington where I have other business. I will stop at the New Willard's Hotel. Please advise me there by letter or wire whether to visit you. Do not hesitate to say so if you would rather not have me come, and give me also your views as to a visit from Mr. Alexander. He wrote me that he would sail from Cherbourg on the Kronprinz Wilhelm, which is due in New York on the 27th. I am writing him to meet me in Washington, which he doubtless intends to visit, but I have not advised him that you are at Kitty Hawk, nor hinted at your plans. So he will not be agreived if he is not invited.

It is a marvel to me that the newspapers have not yet spotted you.

Yours very truly

O. Chanute

(1903)

Dec 27th 3

Mr. Wilbur Wright
1127 West 3d St
Dayton. O

Dear Mr. Wright.

I have had no letter from you since I left your camp, but your sister kindly wired me the results of your test of Dec 17. Did you write?

The American Association for the Advancement of Sqience holds its winter meeting at St Louis Dec 28th to Jan 2d. I have been asked for a paper on Aerial Navigation, and have made it very general in character.

It is fitting that you should be the first to give the Association the first scientific account of your performances. - Will you do so?

Please wire me at the Southern Hotel, St Louis, on monday. I go down Sunday night.

Yours truly

O. Chanute

(1904)

January 1st 4

My dear Mr. Wright.

I duly received your telegram and very interesting letter in Cincinnati. I suppose you were apprehensive that if you had given an account of your performance, it might have led to requests for pictures descriptions or methods.

I did not mention you by name till nearly the close of my talk. Then, after pointing out the paradox that one must have skill in managing it before he attempts to ride on a flying machine, I said:

"This was the kind of practical proficiency aquired by the Wright-Brothers, whose flying machine is said to have been successfully tested on the 17th of December. For three years they experimented with gliding machines, which will be described further on, and it was only after they had obtained thorough command of their movements in the air that they ventured to add a motor.

How they accomplished this must be reserved for them to explain, and they are not ready to make known the construction of their machine nor its mode of operation."

Meantime it is interesting to trace the evolution that has led to this result, and the successive steps that have been taken by others."

Then I mentioned Lilienthal and his successors,&c I was asked at the close of the talk to prepare it for publication in the Popular Science Monthly. Please let me know whether you desire any change in the quoted language.

I enclose a translation of the last letter I received from Capt Ferber. I left a previous one with your brother. I also enclose some clippings which will interest you.

I had a cablegram from Paris enquiring whether it was true that you had flown 119,548 metres. I answered "Reports are greatly exagerated. Await particulars by mail." I have not yet written, and I think it desirable to see you before I do. Please advise me as to your intended movements, and I may come down soon, as I am expecting a call to Cincinnati from the Big Four.

Yours truly
O. Chanute

(1904)

January 14"   4

Dear Mr. Wright.

Your letter dated JanY 8", addressed simply to Chicago, only reached me last night, after having apparently passed through the hands of several mail-carriers. I enclose the envelope.

I am amazed at the impudence of Mr. Herring in asking for 1/3 of your invention. While I could wish that you had applied for patents when first I urged you to do so, I think that your interests are quite safe. The fact that Mr. Herring visited your camp, in consequence of circumstances which I subsequently regretted, will certainly upset any claims which he may bring forth. I suppose that you can do nothing until an interference is declared. If it is, please call on me, and in the meantime try to find out who is his Patent Attorney.

In the clipping which you sent me you say: "All the experiments have been conducted at our own expense, without assistance from any individual or institution" — Please write me just what you had in your mind concerning myself when you framed that sentence in that way.

Yours truly

C. Chanute

(1904)

Jan 20th 4

Dear Mr. Wright

I have your letter of 18th. I am greatly pleased that you now contemplate entering your machine at St Louis. I trust that you will developé it in sufficient time and that you will carry off the main prize.

I was somewhat puzzled by your telegram at St Louis. You talked while I was in camp of giving your performance, if successful, all the publicity possible, and you knew that I would not divulge the construction of your machine as I have never disclosed more than you, yourself, have published. Your telegram indicated a change of policy which you can more fully impart when I see you.

I now think of going to Cincinnati thursday night, and could probably call on you friday afternoon or saturday. Please wire me in case you are not to be at home.

Yours truly

O. Chanute

Jan^{y} 26^{-} 4

Dear Mr. Wright.

My attention was called yesterday to a clever peice of "Journalism" by which you are made to appear to have given an enterview to the Chicago Chronicle. I enclose it herewith.

You are lucky to have the plans of your machine made for you by the newspaper men. This gives you time to get your patents.

Yours truly

O. Chanute

(1904)

Jan^{y} 26^{-} 4

Dear Mr. Wright

I have seen Mr. Willard A. Smith, Chief of the Dept of Transportation, World's Fair, and mentioned the points which you raised concerning the rules for the Aeronautical contests. He says that it was not the intention of the Advisory Committee (Himself, Prof Woodward, Mr. C. D. Mosher and Santos Dumont) who framed these rules to have them interpreted as you have done.

That if you will write him a letter stating the points concerning which you are in doubt he will have a ruling made by the advisory committee, which will be binding upon the International Jury, as to the interpretation to be given these rules so far as they apply to flying machines.

Yours truly

O. Chanute

I mail spearately a map of the Exposition grounds assigned to Aeronautics, and copies of the rules. Mr. Smith's address in Manhattan Bl^{dg} - Chicago.

(1904)

Feb 15" 4

Dear Mr. Wright

I have your letter of 13". I know of no proposal to change the length of the course (10 to 15 miles) as set forth in Sec. III paragraph (c) of the rules.

Santos Dumont has a reputation for making rash statements. When to this is superinduced the general rashness of the newspapers we get remarkable results.

I enclose a translation of Captain Ferber's last letter. I had sent him the Scientific American article and your statement as given out Jan 5. You will note that your success with a motor has stirred up several others besides himself to experiment. I expect that several new types will result, but you are so far in advance that they cannot catch up.

I have received from several persons requests for information as to the construction and details of your dynamic machine, and have answered that it is different in arrangement from the 1902, and that you desire to keep the construction to yourself for the present.

Yours truly

O. Chanute

(1904)

March 3^{d} 4

My dear Mr. Wright

I have your letter of 1^{-} inst. I wrote to Capt Ferber that he would infallibly have broken his neck if he had tried his dynamic apparatus without previous practice.

I hope that you will succeed so well when you resume experiment that you will see your way to entering for the grand prize. You are mistaken however as to there being no "consolation" prizes for flying machines. There are three of them if you can contrive to go slow enough.

I enclose two French clippings, which please return. One of them amused me so much that I made a translation of it. I do not know the author but I have seen articles signed by him in the "Aérophile". I presume that he is a friend of the editor and that he feels sore because you are not ready to disclose the construction of your last machine. I admire his advice to discard the American types of machines, and to try others with lower centres of gravity.

I will send you in a few days reprints of my paper to the Am. Ass^{-} Adv^{t} Science.

Yours truly

O. Chanute

(1904)

March 19   4

My dear Mr. Wright

I have yours of 14 inst. Mr. Santos Dumont has visited St Louis; has had the rules slightly modified, and will enter the race. I figure that with his 60 to 70 H. P. he can obtain a speed of 28 to 32 miles per hour.

I had a letter from Mr. Herring a month ago, stating that if I have any information on the subject of flying machines he would like to get hold of such matter for his paper, "Gas Power". I am ashamed (almost) to say that I have not answered him.

I send a clipping from the London Times which you can keep.

I believe that you receive the "Aérophile." I see by the last number (February) that Mr. Tatin is advising the French Aviators not to copy the Americans servilely, but to strike out on new lines. This may lead to further progress, providing that nobody gets hurt.

I have heard nothing further from Capt Ferber.

Yours truly

O. Chanute

(1904)

March 30"   4

Dear Mr. Wright

Did you get a copy of the "Illustrierte Aeronautische Mitteilungen" (Moedebeck's paper) for March 1904? - It contains an article which, from the rough rendering I have received verbally, throws a side light upon the claim of Mr. Herring to obtain an interest in your invention. If you have not the paper, I will get the article translated.

The same paper contains a 4 page article upon your acheivement, and gives a photograph and a diagram, taken from New York Herald 17-1-04, which purports to show your machine, This shows a horizontal propeller under the front of the apparatus. Is this correct?

I mailed you yesterday some clippings which show Maxim's merry-go-round. Please return them to me after you have duly smiled.

Yours truly

O. Chanute

(1904)

April 3˜ 4

Dear Mr. Wright

I duly received your of March 29˜ It seems to have been crossed by mine of 30˜ and I have been waiting for an answer to that before having the article on Herring in the March Ill. Aer. Mitt˜. translated. From the tenor of your letter I inferred that you have the February issue of the same paper, which gave Herring a 7 page notice. I now enclose a clipping from the Boston Journal concerning the same "ammosing cuss."

I am indignant at the forgery perpertrated by the man Willey, and I am willing to spend some money in punishing him if the laws of Maryland permit. I send you his letters to me and copies of my answers. I suggest that you consult a lawyer and advise me of what can be done.

I thank you for the offer to forward the multiple winged and the oscillating wing machines to St Louis, but I think that under the circumstances we had better give that up. Moreover these are your machines and I only meant to borrow them when gliding machines were still the best that had been produced.

Yours truly

O. Chanute

(1904)

April 15th 4

Dear Mr. Wright.

I have your letters of 10th & 14th, and the clippings returned by you. Thanks.

I mail separately the February number of Moedebeck's Journal. I undertook to have an abstract made for you of the article on Herring, page 54, but the translator made such a mess that I send you the original. I think Herring is mainly endeavoring to find a financial backer.

It will be very well for you to expose Willey when you have occasion to describe your 1903 machine, but my idea was that he might have made himself liable to a crimical prosecution for forgery. I now intend to interview a lawyer about it, and will advise you of the result.

I am glad to learn that your new machine is now approaching completion. I see by the French papers that Archdeacon of Paris has a gliding machine completed and is about to test it on some sand hills near the sea coast at Berk, south of Boulogne. I hope that nobody will be hurt.

I mail a letter just received for you from England.

Yours truly

O. Chanute

(1904)

April 17~ 4

My dear Mr. Wright

Some weeks ago I saw in the foreign press dispatches that Mr. Deutsch had offered a prize of $5000 to the first aviator who would fly by power a closed circuit of 1 kilometer, and that Mr. Archdeacon of Paris had added a like sum thereto.

The Aerophile for March, received to-day, confirms this news, and states that it is proposed to add various other subscriptions so as to raise a "grand prize of Aviation" of $100.000; the details to be ruled upon by the French Aeroclub and to be published later.

There is nothing said thus far about confining the award of the prize to French Aviators, Although I believe that is what is in the mind of the present subscribers, but it will be well to keep your eye on this prize and to perform the feat before official witnesses so as to obtain affidavits establishing a record.

I will advise you further when I learn more. Do you think it would be wise to write to some of my friends to enquire into the status?

Yours truly

O. Chanute

(1904)

April 27th 4

Dear Mr. Wright.

I have yours of 24th. I think that Mr. Hollands must refer to some letter written since I saw him in England a year ago, and which has failed to reach you. The previous correspondence was in February, June and November 1902 and the information then sent has been used by him.

I have heard nothing more as to the proposed French prize for Aviation, but I have a letter from Capt Ferber, who says that Archdeacon has begun his experiments in gliding near Berk. No great progress had been made up to the 14th. Ferber himself could only cover 9 metres, and a pupil of his, Mr. Voisin did somewhat better, and hovered for 5 1/4 seconds at one time. Ferber naively remarks that he is surprised that you are not ready to sell him a motor machine, but he does not mention that he is now building a new one of his own. That is stated in L'Aérophile which says it is to be of 50 square metres surface, to weigh 225 kilos, with a motor of 10 horse power. Archdeacon is also said to contemplate a motor machine. I should expect such premature attempts to come to greif, and make a market for your patents.

Yours truly

O. Chanute

(1904)

May 7th 4

Dear Mr. Wright.

I have yours of 5th, and I thank you heartily for the invitation to witness your forthcoming experiments. I am, however, ~~now~~ building two tie-treating plants, and may not be able to get away on a fixed date.

I enclose a French clipping which please return. Archdeacon seems to have obtained very short glides, and is going to rebuild his apparatus. He states that I did not furnish enough information.

I have a letter from Drzewiecki who states that his machine will not be completed for months, as he is going to St Petersburg on naval affairs.

I have a letter from Nimführ in Vienna, who says that Alexander has lately been there and said that some American Aviators, whose name he would not give, "have done very much better than the Wright Brothers." - What does that mean?

I have advised Major Moedebeck that the pictures of your machine which he republished from the N. Y. Herald are not correct, and that the notices which his New York correspondent sent him of Herring are given to a man who attempted Blackmail.

Yours truly

O. Chanute

(1904)

May 16- 4

Dear Mr. Wright

I have your welcome letter of yesterday, and write at once to wish you a great success. I hope to be kept advised of the results.

That Mr. Silberer has fallen out with Mr. Nimführ is no discredit to the latter. His reference to Mr. Alexander's utterances may cover either Mr. Whitehead or Mr. Herring, but most probably the latter.

To compensate Orville for that mutilated French clipping I send you one in English. Pray keep it.

Do you receive the "Aerophile"? The number for April just received contains an account of Archdeacon's experiments, much like the clipping from "L'Auto", but more in detail. I can send the Aerophile if desired.

Yours truly

O. Chanute

(1904)

May 26 4

Dear Mr. Wright.

I am glad to know, from your letter of 20 that the indoor tests of your machinery have resulted so well, and I am anxious to come down to see your first flights.

Unfortunately some questions, important to my wood preserving business, have come up in a bunch to detain me, and I do not know how soon I can dispose of them.

Santos Dumont has broken his 60 H P motor and must make the race with 40 H. P. He accordingly cabled to have the speed limit reduced to 15 miles an hour, and this has been granted with conditions stated in enclosed clipping, which says that he accepts them. He seemed to be inclined to withdraw when his motor broke. No other man, with the least chance of winning has yet entered the lists at St Louis and the management realizes that it will have to allow entries to be made subsequent to June 1.

I am glad to see that the newspapers have not yet found you out. I hope your luck will continue and I ardently wish for your success.

Yours truly

O. Chanute

(1904)

May 28˜ 4

Dear Mr. Wright

I have yours of 27˜. Mr. Willard Smith told me last week that the time for entries would be indeffinitely extended beyond June 1˜, for those who could otherwise comply with the rules.

He is in St Louis to-day but I am to see him monday and will get an official statement.

Yours truly

O. Chanute

(1904)

May 30th 4

Dear Mr. Wright

The time for entry in the Aeronautical Contests is to be extended from time to time as seems most judicious.

I saw Mr. Willard Smith this morning. He has your letter and will write to you.

Mr. Santos-Dumont is to sail on the 11th of June, and will try to make his first flight within that month.

Mr. Herring proposes to enter the race but is not ready to make his deposit.

Yours truly

O. Chanute

(1904)

June 8˜ 4

Dear Mr. Wright

I have yours of 8˜. [should be 5˜.] I understand that Mr. Santos Dumont has been making tests which are kept out of the newspapers, and is to sail June 11˜.

The shed at St Louis is said to be nearly up, and the hydrogen plant is being erected, so that competitions may begin in July.

I hope that your immunity from premature publicity may continue. - I do not quite understand whether your experiments are made with last year's or this year's machine.

Yours truly

O. Chanute

(1904)

June 17th 4

Dear Mr. Wright

I have yours of 14th inst. From recent French clippings I note that Santos Dumont (who will probably reach New York to-day) did make some preliminary tests of his N° 7 before sailing. He found that he had to change the position of his motor, and place it on the girder. He has a new 60 H. P. motor which works well, but he is going to change his suspension wires when he gets to St Louis, in order to get farther away from the gas vent of the gas.

Three new gliding machines of modified construction are being constructed in France. Preliminary trials in light winds gave no good results with 2 of them.

I thought that your new machine was to be a duplicate of that of 1903, so that either one could be experimented with in case of breakages. Is this not so?

I rather suspect that your experimental ground is not as favorable as that at Kill Devil Hill. Do you contemplate resorting to the latter spot, in order to work out your machine so that you can compete for the St Louis prize?

Yours truly

O. Chanute

June 25~ 4

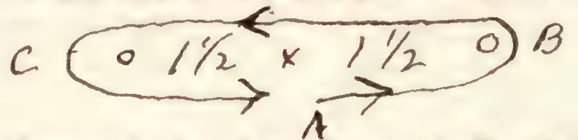
Dear Mr. Wright.

I have your letter of 21~, upon my return from St Louis, where I spent a couple of days with the Exposition officials and Mr. Santos-Dumont.

The latter asked for a number of additional concessions and after a good deal of discussion the following were finally agreed on last evening.

1°. The distance is to be 6 miles instead of 10 miles.

2d. The L shaped course is given up, and the course is to have but two turnings:



Starting at A, turning at B. & C.

3d. The time is to be taken in the air upon crossing the line at A. leaving out the time of starting & landing.

4°. In consideration of these concessions Mr. Santos Dumont agrees to make 10 additional flights after completing the 3 record flights upon which he means to stand as entitling him to the 70°/o of the prize. He is in addition to make an exhibit flight on the 4th of July if the weather permits. Hence he is obligated to make a minimum of 14 flights to entitle him to the full prize.

I presume that the same conditions will apply to all the contestants.

The jury is to consist of the General commissioner for Brazil, the Genl Commissioner for England & myself.

It is my judgment that, in order to give contestants a chance to perfect their apparatus, the time for formal entries will be extended from time to time clear up to September 1~, and that the requirement that a flight of a mile and return shall have been previously made will be strictly insisted on. There have been some 90 applications, of which

5 have paid their entrance fees, but none of them seem to me to stand any show against Santos-Dumont, who will meanwhile maintain the interest in the Aeronautic competition.

You had better obtain from Mr. Smith an official ruling upon the time of formal entry. He understands the difficulties involved in perfecting an apparatus and a motor which is apt to heat unduly.

Meantime I hope that you will use great caution in your experiments, and will not run into a cow. I shall be glad to know how you are progressing.

Yours truly

O. Chanute

Mr. Santos Dumont says that he does not know of any French contestants who are coming over.

(1904)

July 4th 4

Dear Mr. Wright

I have yours of 1st inst.

The author of the injury inflicted upon the Santos Dumont air ship is still unknown. The present theory is that it was done by a secret personal enemy of his. He sails for France on the 7th, and expects to be back with the repaired balloon in 6 or 8 weeks, leaving his men & machinery in St Louis.

This incident leaves the rules as they were, as the object of making concessions was to get an exhibition on the 4th of July, and subsequent weeks, in order to increase the gate receipts. No public announcement had been made of the concessions made to Santos Dumont.

He told me that he was not afraid of you, as he knows how tedious and slow was the working out of a new machine.

I hope you will have good luck, and keep out of the newspapers.

Yours truly

O. Chanute

(1904)

July 31" 4

My dear Mr. Wright

I received yours of 17" just as I was leaving for New York in the search for creosote and I only got back last night.

I have to go to Paris. Ill to night to look after the construction of my new tie-treating plant. I expect to be back here on the 4" or 5" of August, and to receive a letter from you advising me of your final success.

I do not know how aeronautics are progressing at St Louis, not having seen Mr. Willard Smith for three weeks. Just before going East I gave to Mr. Avery a note of introduction in order that he might confer as to a possible exhibition of the "Double Surfaced" machine of 1896 in gliding action, so as to furnish some aeronautical attraction, but I have not learned the result of the enterview. As this is Sunday I probably will not see Avery until my return home.

If you are quite through with the article on Herring in Moedebeck's "Ill^{o} Mitteilungen" (I think it was the February number,) kindly send it back to me to keep my file unbroken.

Yours truly

O. Chanute

(1904)

August 14"   4

Dear Mr. Wright.

I have yours of 8", and I feel gratified that you are approaching a success, for I feel confident that once you get a good start you will make a phenomenal flight.

Avery has made little progress towards his proposed gliding experiments. He was bluffed by the gasoline hoist men from whom he tried to hire an engine. They wanted to sell one, and my absence from home stopped negociations.

I go down again to Paris, Ill, to-night, and will not be back till the last of the week.

Aeronautics are languishing at St Louis. Even those who have paid their entrance fees are not coming forward with their machines, and Mr. Myers has been let go as there was nothing for him to do.

I hear nothing from Europe and I can only hope that the present lull is the precursor of a breezy time in Aeronautics later.

Yours truly

O. Chanute

(1904)

Sept˜ 5˜ 4

Dear Mr. Wright

I have yours of Aug 28˜, and congratulate you on the good progress you have made.

Mr. Avery started for St Louis last night, to make arrangements to compete for the gliding prizes. He is to use an electric motor, and a portable Railroad track and car. It will probably take him two or three weeks to get his plant together and make his preliminary experiments, which are to take place in the early morning. As he is not well off I am furnishing him the funds, and have therefore declined to act on the International Jury, for that concourse at least.

I enclose a translation of a letter just received from Cap˜ Ferber. He seems to have been called to the headquarters of the Aeronautical department of the French Army at Chalais-Meudon. I have no doubt that he will have a lovely time with Col. Chas. Renard, who has lately been publishing a lot of papers on Aviation. I suppose that you have the Ferber pamphlet.

Yours truly

O. Chanute

Sep 30ᵗʰ 1904

Dear Mr. Wright

Thanks for your most interesting letter of 18ᵗʰ

I have been head over heels in the effort to get my tie treating plant at Paris completed. I have been there much of the time and go down again to-night.

Avery has not got started yet, the Exposition having been very backward in furnishing him the required facilities. The most rigid economy is being practised. The Aeronautical Congress is to make a bluff at being held on the 4ᵗʰ. There are very few papers and I am not advised as to the prospective attendance.

Yours truly

O. Chanute

Oct 12~ 1904

Dear Mr. Wright

I have just returned from the St Louis Exposition and find here yours of 5~.

I expect to go to Cincinnati thursday night and to call on you friday afternoon (14~) or Saturday.

Yours truly

O. Chanute

(1904)

Nov 19"   4

Dear Mr. Wright

I returned last night from a prolonged absence, starting my Paris Plant.

I send you herewith the Moedebeck Pocket Book, and I also enclose a French clipping which lays down the rules for the $10.000 prize for a power flying machine. This prize you can win if you choose to go to France to do so.

Mr. Avery sprained his ankle and withdrew from the contest for the gliding machine prize at St Louis. His tow line (hemp) had been used without his knowledge by some of the kite fliers and had been frayed in three places by rubbing over the roofs of the buildings. He did not examine it, notwithstanding my repeated injunctions, and when he had risen some 40 feet the line parted. He came down hurriedly and landed on the asphalt walk so that his ankle twisted and was sprained. He is getting over it, but greatly regrets not winning the prize, which he says would have been as easy as picking the money on the street.

Yours truly

O. Chanute

(1904)

Dec" 25" 4

My dear Mr. Wright.

I have yours of 20", and I congratulate you heartily upon the successful results of your improvements and the safe progress that you have made in controlling your machine. I wish you still more success and a happy new Year. I trust that it will not pass without bringing you a material reward. Please convey my congratulations to your brother, to your father and to your sister.

I have now a curiousity to know what are your final conclusions as to the power actually required for artificial flight, and whether you hope to reduce it. I am under the impression that birds use less power than you have found necessary.

I have been thinking it not unlikely that you should be called upon to go to Japan. It could well afford to give you and your brother $100.000 for a few months work in reconnoitring. Santos Dumont would preferably be called upon by Russia, as that country follows the French lead.

Have you got my "January" number of Moedebeck's Ill^{d} Aero" Mitt^{n} — You received the "February" number, but I do not find the January issue.

Yours truly

O. Chanute

Feb. 16ˉ 5

My dear Mr. Wright.

I have been quite sick for over a month and confined to the house by the grippe.

You asked me in your last letter whether I had definite information regarding the tip to tip measurements of a crow, and this is the first moment that I have had energy enough to look it up.

The best information I have is that given by Mouillard in his measurements of birds:

	Wt in lbs	Surface sq.ft	Spread of wings	Width of wings	Proportion
Egyptian Rook	0.869	1.535	2.75 ft	0.59 ft.	4.66 to 1
" Crow (corax)	1.353	2.198	3.52 "	0.656	5.37 " 1

Cayley mentions the "Rook" and the "crow" indiscriminately and he estimates it to weigh 1 lb per square foot of surface which probably obtains after the bird has had breakfast.

In this connection I may mention a discrepancy on Page 25 Aerˉ Ann 1895, in which Cayley's model is said to have descended a hill at an angle of $\underline{18}^{\circ}$, while in the reprint of the same paper in Report XI Aeronautical Soc^{y}. Gt Britain, page 89, it is given as $\underline{8}^{\circ}$.

I undertook in my book, page 59 and following, to compile the estimates heretofore made of the power exerted in flight by birds. A compendium follows:

W. Smyth. - 160 ft lbs per min, per lb = 206. lbs sup^{d} per H. P

Alexander - 270 " " " " " " = 122 " " " "

Tatin - 33 " " " " " " = 1000 " " " "

" - 197 " " " " " " = 167 " " " "

Richet - 105 " " " " " " = 314 " " " "

My own observations that the buzzard generally descended 1 in 10 while gliding at 16 miles an hour, or 23.47 ft per second, led me to assume that the resistance was 1/10 of the weight, so that for one pound we would have

$$\frac{23.47 \times 60}{10} = 140.8 \text{ ft lbs pr min.}$$

Hence – 140.8 ft lbs. pr min, per lbs = 234.4 lbs supported pr H. P.

But if there be an ascending trend of wind it is possible to do still better, for then the bird can assume a negative angle to the horizon and be supported.

Prof Zahm measured the resistance of my buzzard weighing 4.25 lbs and set at a negative angle of 5° in a current of wind (artificial in tunnel) at speeds of 6 to 15 ft per second. He deduced that the resistance varied as the 1.81 power of the speed, and that at 15.52 miles per hour, or 22.76 ft pr second it was 0.27 lbs

Whence power $\frac{0.27 \times 22.76 \times 60}{4.25} = 86.88$ ft lbs per min pr lb.

Hence. – 86.88 ft lbs per min, pr lb = 380 lbs sup^{d} pr H. P

Yours truly

O. Chanute

Notes for Wright

Mouillard measurements P. 96

Rook - 0.869 lbs - 1.533 sq. ft. - 275 spread - 0.59 width = 4.66 to 1

Crow - 1.353 " - 2.198 " " - 3.52 " - 0.656 " = 5.37 to 1

Lbs supported per H. P. Chanute P. 39 & seq

Dr W. Smyth. 160 ft lb per min per lbs = 206 lbs per H. P

Mr Alexander - 270 " " " " " " = 122 " " "

Tatin - 33 " " " " " " = 1000 " " "

" - 197 " " " " " " = 167 " " "

Richet - 105 " " " " " " = 314 " " "

Bird gliding 1/10 - $550 \div \frac{2347}{10} =$ = 234.4 " " "

Chanute Buzzard tested by Zahm - Negative angle

Resistance 0.27 lbs at 15.52 miles an hour = 22.76 ft pr second

0.27 x 22.76 = 6.14 ft lbs per second for 4.25 lbs bird

$\frac{x}{4.25} = \frac{550}{6.14} = x =$ 380 lbs sustained per H. P.

(1905)

March 6 5

Dear Mr. Wright

I am truly sorry to learn that all the various members of your family have had the grippe, even if the attacks were mild.

I note that the measurements of the crow which you have secured agree closely with those of the Egyptian Rook, as given by Mouillard. What do you figure to be the power which he expends at the speed you give of 24 miles per hour.

I figured, as you know, that the Buzzard, at 18 miles an hour expended 140.8 ft lbs per minute for each pound of his weight, while you say that a flying machine will have a limit of 75 pounds supported per horse power at 35 miles an hour, which amounts to an expenditure of 440 ft pounds per pound of weight.

I am surprised that the speed should make so great a difference, in view of "Langley's law"? that the greater the speed the less the power in proportion.

I should be glad to have your figures whenever you have leisure and energy.

Yours truly

O. Chanute

(1905)

March 16th 5

Mr. Wilbur Wright
Dayton, O.

Dear Sir.

The original English of the passage on page 331 of Moedebecks book is as follows: "They discarded the tail and substituted therefor a hinged horizontal rudder at the front, set at a negative angle of 7°, which could easily be operated by the aviator while under way. Their theory was that the man should constantly balance and guide the machine by the action of the rudder, steering to the right or left by warping one wing or the other; light strings leading to his hands for that purpose. Figure 105 shows this apparatus in the air."

I think that I sent you a copy of the article from California Feb 13th 1902. You suggested a few verbal changes which I made and sent to Moedebeck. I also sent you the revision and completion of the article July 17th 1902.

Would personal influence at Berlin be of value to you? Major Moedebeck would (I think) be very glad to exert it, and I know a past employe of the patent office (Mr. Geo Hirschfeld) whom I might write to.

Yours truly

O. Chanute

(1905)

March 16th 5

Dear Mr. Wright

I have your of 11th inst. The Zahm experiments covered all resistances, (Head, Drift, Skin friction) of the soaring buzzard, the motive power being furnished by the ascending trend of wind and hence measured by R.v Your formula $\frac{w.\ v.}{a.\ c}$ does not apply as it takes no account of the head resistance which varies in birds.

I do not find my measurements of the flight of the sparrow, but my present recollection is that his speed is 25 miles an hour, and he goes about 10 feet before he accquires it.

The most suitable ground in Illinois for practice I beleive to be the large flat top of the sand hills at Dune Park. They are easily accessible to one who knows the secret path in the swamp, and are quite desert, the only objection I can see is that the fine sand might cut the machinery. If circumstances are such that it is not advisable for you to resume experiments near home, I would suggest that you come to Chicago and go down with me to look the ground over. Give me a few days notice.

I beleive flapping wings to be more efficient than screws, because they utilize the currents produced by the up stroke.

Yours truly

O. Chanute

(1905)

April 4th 5

My dear Mr. Wright

I have yours of March 26th — I herewith enclose the original Ms of my article for Moedebeck. You can keep it as long as you like.

Have you received the March issue of the "Illus" Mitteilungen" (Moedebeck's) It contains an article by Dientsbach, which I have not yet succeeded in getting translated, giving a picture of your flying machine and apparently exact data of performances.

I enclose an account of a bold performance in California. I will write to Montgomery for particulars.

By "utilizing of currents" with flapping wings, I mean that the up stroke drags a certain amount of air with it, and this being met by the down stroke increases its effectiveness.

I do not know of any prairie grounds where both seclusion and large spaces exist, save possibly the Kankakee Marshes. It might be worth your while to examine them. I think they are being drained.

I see by the newspapers that the French are meeting with very slender success in repeating gliding experiments.

Yours truly

O. Chanute

(1905)

April 13" 5

Dear Mr. Wright

I find that I have given away every copy of your second paper read before the Western Society of Engineers.

If you have a few copies to spare I should be glad to get them.

Yours truly

O. Chanute

(1905)

April 14th 5

My dear Mr. Wright

I have yours of 12th, and wish you to thank Orville warmly for me for sending the translation.

You dont know how much I have been amused by Archdeacon's letter, which I return. First the French said that they would not copy servilely, but would improve on American practice; then, on trial, they concluded that we were liars, and so hinted in newspapers.

I am curious to know what you answered to Archdeacon. I suppose that if the restriction were removed requiring the one kilometer circling flight to be made in France you might allow one or two judges to come over to see you win the $10.000 prize. I dont think they would accept.

My idea about the up stroke of the bird's wing is that the pressure on the underside due to the speed is diminished (hence the bird descends) and that an upward motion is imparted to the air rushing past the lower surface. Hence the down stroke encounters air which has a diagonal motion due to forward & upward movement.

I send a few clippings (which please return) that may interest you. Archdeacon evidently tried to improve on Avery's experiments but got frightened at the last moment and sent the machine up without an operator!

Yours truly

O. Chanute

(1905)

April 18   5

Dear Mr. Wright

Enclosed please find a letter from Mr. Montgomery which please return when you have read it.

I regret that he has gotten into a wrangle with Baldwin and I fancy that in this and in the developement of his aeroplane he is like the young bear who had all his troubles still to come.

Yours truly

O. Chanute

(1905)

April 28th 5

My dear Mr. Wright

I have yours of 20th and I am greatly amused by your account of the answer made to Mr. Archdeacon. I enclose another clipping about him.

I have an answer from Montgomery, who says that his machine had about 180 square feet wing surface, 24 feet from tip to tip, two surfaces in tandem (somewhat like Langley's) and weighed 42 pounds; the aeronaut weighed 145 lbs. The speed and angles of flight varied and were not measured. The time occupied in descending was about 13 minutes.

If we accept the statement that the aeronaut cut loose 3000 ft up, and assume the descent at 1 in 7, we have 21000 ft for the distance glided in 13 minutes, or at the rate of say 18 miles an hour.

Montgomery also says that he has had urgent and promising demands for machines for exhibition purposes, and is preparing them; to be first shown to the press, when full sets of photos will be taken and sent to me with accounts of the performance. I infer that he has applied for a patent and does not want to disclose his details until he is protected.

Yours truly

O. Chanute

(1905)

May 2d 5

Dear Mr. Wright

I herewith enclose a translation of a letter received yesterday from Capt Ferber with a photo, which latter please return.

I also enclose clippings which you may find interesting.

Archdeacon seems to me to be desultory, as far as he has got, and if you make out the French I shall be glad to have your criticisms. I have no notion what the German article says, save that your name is repeated a number of times.

I go to Washington for a few days to-morrow.

Yours truly

O. Chanute

National Hotel
Washington, D. C.
May 10, 1905

Dear Mr. Wright

While In Washington I have met Mr. Berliner of Telephone and Megaphone fame. He tells me that the only way to get a patent promptly in Germany is to have it understood that some important German house is interested in the invention. Otherwise every device is employed to obstruct the foreigner. Mr. B. has had considerable experience in this matter.

Yours truly

O. Chanute

[1905]

May 23d 5

Dear Mr. Wright

I have yours of 6th upon my return from the East, and herewith return the copy of the "call" of San Francisco sent by you. I also send copies of the "Examiner" and the "Bulletin" giving an account of Montgomery's exhibition.

Also a letter and photographs from Montgomery which please return when examined.

I enclose a letter from Kress indicating that the Germans doubt your achievements, as do the French. I have been much amused with your remarks as to the latter and think you have sized them up about right.

I have written to the publishers to send you a French pamphlet written by an architect Mr. F. Roun, describing his unsuccessful experiments with flapping wings, and I have also written to the German publisher of Kress's pamphlet to send you a copy.

I shall be glad to know where and when you are to resume your practice, and how near you conceive yourselves to be from a practical machine which can be used in war.

Yours truly

O. Chanute

(1905)

May 30th 5

Dear Mr. Wright

I have yours of 28th inst. — I am very glad indeed to know that you stand ready to furnish a practical flying machine for use in war at once, and I congratulate you heartily upon your success.

As an American I greatly regret that our government has apparently decided to allow foreign governments to take the lead in utilizing your invention. Please advise me 1° Whether you have approached our war office? &c 2^{d}, Whether you would object to my putting a flea in its ear?

I have just been asked to prepare an article of 1000 words for the "New Standard Encyclopedia." Please tell me how you would prefer that I should allude to your perfected machine?

Yours truly

O. Chanute

P. S. I mail separately a copy of a pamphlet "The Aeroplane" of which Montgomery sent me a duplicate. I have just received them and have not read them.

(1905)

June 6"   5

My dear Mr. Wright.

I have your letter of June 1" and return the enclosures.

I am at a loss to understand how the Ordnance Department misconstrued your letter into an application for an appropriation to experiment and assumed that your invention was not brought to the stage of practical operation. Are you sure that no written or verbal mistaken statements were transmitted with your letter.

My first feelings were of mortification and regret that the United States war department should have extended to you "a flat turn down", as you express it. Now that I have cooled down I see some advantages in your being forced to consider the overtures made by Col. Capper for the British Government, because: First, your invention is worth far more to the British than to the United States government. Second, the British are less hampered than we in appropriating secret service funds, so that you can probably get a better price, and sooner. Third, your invention will make more for peace in the hands of the British than in our own, for its existence will soon become known in a general way and the knowledge will deter embroilments.

I think that you should, however, endeavor to protect the interests of the United States in your deal with the British. I fear that this will be difficult; for their War department will probably want you and your brother to enter its service, to build machines and to teach operators, and will insist upon absolute secrecy on all present construction and future improvement. It will probably forbid all taking out of patents.

If you close negociations with England I hope that you will find some way of saving our government from any ill results of its present blunder.

I enclose the translation of a private letter just received from Captain Ferber, now at Chalais-Meudon, who seems fully aware of the importance of an efficient flying machine in war.

Yours truly

O. Chanute

(1905)

June 6 5

My dear Mr. Wright.

I have your of 3 about the Standard Encyclopedes article.

This is wanted within a month and I believe that I had best say very little about your machine or its performances, for if you are dealing with the British war department your position will be stronger the less is publicly known about your machine. Please let me know how soon you expect the English officer and what your final wishes are.

I was amused with Montgomery's disquisition of "Scientific Study." Much of it is bosh but it is entirely bona fide. He had a theory ten years ago that one body in collision with another imparted to the latter its force of impact, plus the force of the reaction. This however cuts no figure with the direction of fluid movements and I think that what he illustrates is the result of actual experiments with water.

He say for all that have arranged his "following" surfaces so as to get more lift that I ever was able to obtain from such arrangement.

Yours truly

O. Chanute

(1905)

June 28th 5

Dear Mr. Wright.

I have yours of 18th upon my return to the city, but must leave again to-night for Kansas City.

I thank you very much for the invitation to see your experiments. I hope that they will result to your entire satisfaction, and I beg you to advise me of the progress accomplished.

Let me know also when the British representative turns up. I should like to be present on that occasion.

I mail a couple of clippings which may interest you.

Yours truly

O. Chanute

(1905)

July 15"   5

Dear Mr. Wright

I herewith enclose a copy of my article for the "New Standard Encyclopedia" which was made for you.

Please advise me promptly if you wish to suggest changes.

I hope that your experiments have resulted to you entire satisfaction, and I shall be glad to learn about them.

Best respects to your sister and to Orville.

Yours truly

O. Chanute

(1905)

July 27" 5

Dear Mr. Wright.

I have your of 18", and hope your next experiments will be more productive of results.

I enclose a clipping giving a good picture of the Archdeacon machine. You will note that he has added 4 vertical keels to the main surfaces and a tail with 3 vertical keels, while he still retains the front rudder.

I am curious to know whether you think that these complications are likely to prove valuable.

I have been greatly shocked to learn of Montgomery man's disaster. I think one of the wing hinges broke.

Yours truly

O. Chanute

(1369)

August 8th 5

Dear Mr. Wright.

I have yours of 6th inst. I have sent you some clippings showing that the British war office has been investigating what is to be expected from Barton before interviewing you.

The accounts which I have seen of the Maloney tragedy state that the machine broke by catching on the suspending rope when first released.

I have not yet answered Capt Ferber. What do you suggest as best to say to him about you?

I have a letter from Spratt, who is greatly pleased at the result of some recent experiments, and who says that his form of construction is the solution of the problem of stability. His account of his theory is somewhat perplexing by reason of his misapplication of words and terms.

What do you understand his theory to be and what do you think of it?

Yours truly

O. Chanute

(1905)

Sep 8- 5

Dear Mr. Wright.

I have yours of 16- August. -- I saw a professor in the Catholic college here, a few days ago, who told me that he had talked with three Jesuits from Santa Clara who were present when the Montgomery accident occurred. They say that when the gliding machine was cut loose a rope hanging from the balloon broke a small strut over which passed the bracing wires of the rear wings. When Moloney made the deep dive this strut got out of place and the rear wings collapsed. Moloney endeavored to glide on the front wings alone, but failed and fell.

Montgomery is said not to be dissuaded from trying again and to be building another glider, having offers of money from promoters who wish to exhibit the machine around the country.

I send you some clippings which indicate that the British war office is investigating a new balloon.

One of my daughters has been sick, and I am to take her to the sea shore as soon as she is able to travel. Let me know when you expect the British officer.

Yours truly

O. Chanute

(1905)

Oct 16th 5

Dear Mr. Wright

I returned from the sea shore about a week ago, my daughter having improved in health through the trip. I have your letter of Sep 17th -

I fancy that you will have soon a visit from the British expert. He seems, from the enclosed clippings to have been waiting for the tests of the Marinahe's air ship, but as this was destroyed on the 4th inst he must now be loose footed.

I find here a number of French publications which I will bring down when I visit you. Notably a lecture by Capt Ferber, who has credited to me the statements made in the German article, and writes to apologize on the ground that he did not like to give credit to the Germans. He also says that he is falling into disfavor at Chalais-Meudon, and is not likely to get an appropriation to build his motor machine.

The last issue of the Aérophile contains an article by Goupil, figuring that the Archdeacon aeroplane needs a motor of 40 Horse power to fly, and as it cannot carry the weight of this I fancy that Mr. Archdeacon is brought to a pause.

Yours truly

O. Chanute

(1905)

Oct 22d 5

My dear Mr. Wright.

I have your letter of 19th and I am enthused and delighted by what you tell me of your recent advance in performance. I congratulate you and your brother most heartily upon a success as well deserved as it is epoch making.

I am glad to know that you intend to give the American government another chance to acquire your invention. If I can be of any help in bringing your achievements to its notice, or to that of the British, please command me.

It is a perfect marvel to me that you have kept your performances out of the newspapers so long. With so curious a public as our own, and such appetite for sensation as obtains in the press I felt convinced that some enterprizing reporter would discover you some time and make you famous. I think you must make up your mind to enforced publicity as to performance while preserving the secrets of your construction. From a military point of view it would be preferable to to keep the whole thing secret, but I doubt whether it can be done. I shall be very glad to be present at your coming effort to fly for one hour.

Yours truly

O. Chanute

[1905]
Nov 4th 5

Dear Mr. Wright.

I find in "Workshop Receipts" the following. "Waterproof Glue to which bichromate of potash has been added, and which has afterwards been exposed to strong sunlight, becomes insoluble. The proportions are not very well ascertained, but about 1 part of the bichromate, dissolved in water, and added to a solution of 6 parts of solid glue, answers very well."

I am reminded however that Geo. M. Sterne & Son Rooms 16-17-18 Rialto building, Chicago, gave me a year or so ago three sample of their waterproof glue, prepared from corn, which they desired us to test for our timber treating process.

These samples I have hunted up, and I herewith mail them to you, enclosing with this the printed directions for using this glue. If upon testing you find this to be the material you need, please let me know and I will procure more for you.

The weather is favorable for flying experiments here to day, and I hope you have been able to make your record.

Yours truly

O. Chanute

[1905]

Nov 7" 5

Dear Mr. Wright.

I received this morning a letter from Capt Ferber, of which I enclose a faithful translation.

I also enclose my answer to him, and a translation of that. You had better compare them.

If the answer is what you desire, please mail it. If it is not shaped as you like, return it to me, with indication of your desires.

I should like to have copies of your late correspondence with our own war Department if you feel that you can trust my judgment to use it, or not to use it as circumstances may warrant.

Yours truly

O. Chanute

(1906)

Nov 16" 6

Dear Mr. Wright.

I thank you for your letter of 8" and copies of your correspondence with the war department, which are received upon my return from Kansas City.

It is a great pity that you were unable to make your record flight this year. If either the British or French agent come this winter they will want to see a long flight and you may have to go to Mobile or Pensacola to perform it in any comfort.

I sent you yesterday an article which will interest you in the "Technical World Magazine" for December, which is just out. I mail to you herewith some recent clippings which may amuse you; particularly the French one which announces, Page 158, that a Frenchman has solved the problem of flight in a most simple way.

I shall be glad to learn of your further plans and acheivements.

Yours truly

O. Chanute

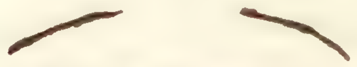
(Copy)

Nov 17th 5

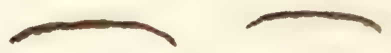
Dear Mr. Wright.

I enclose a letter from Mr. Montgomery, giving an account of his accident. He confirms the statement which I had already given you that the mast had been broken by a balloon rope.

I understood you to say that such an accident would follow arranging the surfaces radially



Would this occur in your judgment if placed on the same line



as Langley did.

How far should surfaces be apart longitudinally in order not to interfere with each other?

Yours truly

O. Chanute

(1905)

Nov~ 24~ 5

Dear Mr. Wright.

I have your letter of 20~ and also the pamphlets & clippings returned.

The fact that information concerning your doings emanates from Washington (Gilson Gardner, Bell, Manly) suggests to me the surmise that the war department, or perhaps Prof Langley, has had a man to visit Dayton to pick up information, and has leaked as to the results.

I think that you are now at the mercy of any enterprising newspaper as to your performances, but that you can preserve your secrets of construction.

I shall avail of your leave to no longer keep secret the results of your experiments by advising Wenham confidentially, but will not volunteer information to others.

Did you tell Ferber on what terms you would show and sell your invention?

I have been invited to join the Aero-club in New York, have you?

You have not answered my question as to how far, in your judgment, following surfaces like Montgomery's should be placed to avoid interference.

Yours truly

O. Chanute

(1905)

Dec 6th 5

Dear Mr. Wright.

I have yours of 4th and I return the Ferber letter with a translation. I think that you will readily establish that it is not a gold brick you have to sell, but that there will be a good deal of hesitancy about the price.

Answering your question: Mr. Manly is about 5 ft 6 in. tall, youthful looking and with a brown moustache.

When in Boston last April, I told Mr. S. Cabot that you had offered your machine to the U. S , and had been turned down. A week or so ago he wrote to ask whether you needed financial assistance. I answered that you did not but had talked or organising a joint stock co. He now writes that this may be floated by Lee Higginson & co of Boston, and suggests that you and I should come on for an enterview, and a consultation with a patent expert. I have answered that I would submit the question to you, but doubted your readiness to make talk at present. What do you say?

How do you get on with the U. S. patent office?

Would you like to have your matters privately presented to the President or to some member of Congress, so as to lead for a request for past correspondence?

Yours truly

O. Chanute

(1905)

Dec 3 5

Dear Mr. Wright.

I am glad to learn that the patent office has allowed all your claims. I was afraid. —

I think you are quite right in deferring an organization till you see how your pending negociàtions will come out, and in awaiting conviction on the part of the President. He may blame you hereafter, however, for not calling his attention to your recent acheivements.

On Nov 20 Prof Zahm mentioned in a letter that Mr. Carl Dienstbach was preparing an article for the New York Herald. I have seen the article of Nov 26 and I believe that the "man in this (New York) city" alluded to was either Herring or Manly, as both of them seem to have given points and information to the writer of the article. This is clear from internal evidence.

I am enclosing a French clipping which may prove interesting to you.

Yours truly

O. Chanute

(1905)

Dec 11" 5

My dear Mr. Wright

I enclose a French clipping just received. Do not be in a hurry to send it back.

You will note that Captain Ferber was unable to preserve silence, and that a very pretty controversy has been started. This probably is the inauguration of publicity.

Did you write a letter to the "Aérophile"?

Yours truly

O. Chanute

(1905)

Dec 12th 5

Dear Mr. Wright.

I enclose a translation of a letter received last night from Captain Ferber. Please advise me promptly what sort of an answer you would suggest for me to make.

Advise me also as to the status of your negociations with the British.

My confidential letter to Wenham should have reached him about Dec 4th and he may talk to the authorities when he sees the account of the French negociations in the papers.

Yours truly

O. Chanute

(1905)

Dec 14th 5

Dear Mr. Wright

I have yours of 13th and herewith return your cablegram and clippings at once.

I beleive that your local papers would now greatly appreciate your permission to publish some accounts of your performances. If they do, please send me the clippings.

I think the President should also have copies of the papers.

I think you are wise in allowing some publicity to occur. I do not see how it can injure your pending negociations.

Yours truly

O. Chanute

(1905)

Dec 16th 5

Dear Mr. Wright

The American Association for the Advancement of Science is to meet in New Orleans Dec 28th. Would you like to prepare a short paper announcing what you have accomplished during the last 2 years. Or would you like me to do it. If so please indicate how much you would wish me to tell.

Of course, all mention of pending negociations is to be kept out, but this seems to me a good time to make your acheivements known among scientists.

I enclose some clippings.

Yours truly

O. Chanute

(1905)

Dec 21 5

Dear Mr. Wright.

I have yours of 19 inst. In view of your unwillingness to prepare yourself a statement to be presented by a member (as is usual) to the Am. Ass^n for Advancement of Science, and of the injunction of Mr. Lahm, who is the Dean of the pilots of the French Aero-club, "to avoid publicity", I have concluded to make no statement. It never occurred to me that such a statement should cover a description of your machine and methods.

I had a call from Mr. Herring this morning, who said that he was hunting up exhibits for the Aero-club of America, to be displayed in New York Jan 15 to 29 He made the assertion that you had written to somebody that your screws were 8 feet in diameter and that your motor was placed on the bed of your machine. He added that the motor had 4 cylinders of 4 inch bore, and that the total weight was 950 pounds, some 70 pounds of this being iron bars which were shifted during flight. He did not remember from whom he had the information. I return Archdeacon's squib. As I read it I burst into such laughter that one of my daughters was alarmed and ran up to find out what was the matter. I could only gasp: It is — because — Archdeacon — is such — an ass.

Yours truly

O. Chanute

(1905)

Dec 21" 5

Dear Mr. Wright.

I did not realize that your offer to Ferber covered sales to individuals as well as his government. I belaive that the "friend" shose visit is announced is really an agent of the French war department which sends him as an individual in order to "save its face" if you turn out to be a "Bluff" Naturally your first care will be to satisfy him most thoroughly as to the reality of your past performances, and to ascertain what capacities are required in the machine which you are asked to furnish. The latter may terminate negociations. If he turns out to be the agent of a syndicate he may fairly be asked for credentials from those who are to pay the money, and to pledge himself to absolute secrecy before any terms are mentioned. An acknowledgement that you are also negociating with other governments furnishes a good reason for declining to give any syndicate a chance to make a speculation out of your invention.

I think your own frankness and evident good faith will prevent any misunderstanding, but I still adhere to my original beleif that the best disposal of your machine would be to have it go to one single government who would keep it secret and thus promote peace, while the others were meeting with numerous accidents in the efforts to rival it.

Yours truly

O. Chanute

(1905)

Dec 23d 5

Dear Mr. Wright

I think you will be gratified in reading the enclosed letter from Mr. Wenham, which please return when you have read it.

I wish to you, to Orville and to your sister, in fact to all members of your family, a merry Christmass and a happy new year, together with ample success in your undertakings.

Yours truly

O. Chanute

(1908)

January 7th 6

My dear Mr. Wright

I have yours of Jany 2d upon my return from Kansas City, where I have just closed a deal to erect a $100.000 store.- A considerable undertaking for me.

I am delighted to learn that you have sold a flying machine to the French for $200.000, and this, without onerous restrictions as to sales to other Nations.

This may not make for peace as much as an exclusive sale to one nation for now they will all have a machine, and I fancy that the French have acted so promptly because they expect early war, but it will make you world famous, and eventually millionaires, if you care for the latter.

The high minded thought expressed in your letter of Dec 27th that you did not want to assume the moral responsibility of selling your invention exclusively to one nation, without knowing how it would use it, has impressed me greatly, and I recognize the fact that while possession of your machine would deter attack upon a nation peaceably disposed, it might also be used to attack its neighbours. I hope that universal peace will result and what you write about the Austrian proposal seems to look that way — I heartily congratulate you.

I send back you French clipping and add two of my own.

Yours truly

O. Chanute

(1906)

Jan 10 6

My dear Mr. Wright

I have been very much amused with the lively account which Mr. Robert Coquelle gives of his visit to you, in the Auto. I thank you for the clippings and return them to you herewith. I retain the one from the Dayton paper, in accordance with your recent letter. If you should want it, I will send it back.

Now that you have closed your contract with Mr. Fordyce, I suppose that the reproduction of the cut of your machine will do no harm. It is so indistinct, any how, that the important details cannot be guessed at.

Yours truly

O. Chanute

(1906)

Jan^{y} 12" 6

Dear Mr. Wright.

I have yours of 10" — I do not expect to attend the exhibit of the N. Y. Aero-Club, but I have presented it with a lot of my old models, and said "good riddance".

I have just received some clipping which I think you should see at once. I enclose them herewith.

I am puzzled to conjecture how the "Mail" got knowledge of your method of starting up, and how the "Auto-Motor Journal" has been advised of your proposition to the U. S. government. Do you know?

Yours truly

O. Chanute

(1900)

Jan^y 12$^-$ 6

Dear Mr. Wright

Since writing you this morning I have your of 11$^-$ by the noon mail.

I mail separately a map of Florida - I think that the vicinity of Tampa is too much infested with tourists & fishermen to suit your purpose.

There is a winter hotel at St James City, Pine Island. This island is all sand, 5 to 10 feet above tide, with a belt of trees along the shores and prairie interspersed with brush and scattered trees inland. The smaller islands are similar in formation, and there is a wilderness on the main land south of Myers. — Marco was the last settlement 15 years ago. I did not go as far south as the "ten thousand islands" but was told that they were mostly bare sand "keys".

I belsive the surest way of finding an adequate place would be to hire a launch, either at Tampa or at Key-West, and to coast along like tourists.

I have been thinking of taking my daughters to New Orleans, and thence to either Mexico or Cuba, as soon as my tie treating books are written up. — Please advise me of your own plans.

Yours truly

O. Chanute

(1906)

January 17th 6

Dear Mr. Wright.

I have yours of 15th inst. I believe the "Transportation club" of New York consists cheifly of Railroad men. I had an invitation and sent regrets.

I enclose a letter from Mr. Pedley, manager of "The car". It is easy to answer that no photos are to be obtained, but if I make a "few remarks" I wish them to be such as to forward your interests. My theory as to the way the U. S. government affair got into the "Automotor Journal" differs from your own. I surmise that some one of the Ordnance Board was foolish enough to mention the matter to the British attaché and that he transmitted the information to England. What is the status of your negociations?

I return your clippings and add some of my own. The French are very lovely and amusing, and you will be still more tickald with the enclosed translation of a letter from Roux, whose pamphlet I had sent to you last summer. Pray tell me how to answer him?

I foresee that you will go to Kittyhawk. That will be cheapest. At what date are you to deliver the French machine?

I would like to know more accurately how much you meant to release (last November) in absolving your friends from their obligation to keep secret the results of the past season's experiments. Thus far I have limited myself to assurances of your perfect truth and reliability.

Yours truly

O. Chanute

(1906)

Jan~ 20~ 6

Dear Mr. Wright.

I return your clippings. They are not as amusing as the last lot and descend to personalities, but the French are evidently uncertain whether you are a pretender or no.

You do not say whether you advise my giving the "car" an account of your performances, or a polite refusal. Please advise me promptly.

I remember that you were in doubt when I asked you whether to make a statement to the Am. Association for the Advancement of Science, but some publicity has occurred since, and you may now desire that something shall appear in England.

Yours truly

O. Chanute

(1906)

Jany 28~ 6

Dear Mr. Wright.

You enthused so very little over the subject of my writing for "The car", that I made up my mind to refuse Mr. Pedley any information as well as the photo. I was puzzling in what polite terms I might do so when the Aeronautical Journal came in. The "remarkable" way in which Orville's letter was received, (Alexander & Capper being present) has changed my mind and I will write to Pedley so as to confirm the truth of your statements in a few days.

Now, here is more fun. I enclose a letter from the Austrian Aeronautical Society in which able and distinguished gentlemen, in a fever of curiousity, offer to trade off "diplomas" for a "schematical sketch" and description of your machine. They really deserve that I should send them the "schematicals" of the "No-Name" series, which by the way I never meant for you to return, but I will write instead a very respectful and modest letter, declining the proffered honor as being quite unworthy of it.

Have you been advised of the honor for you and have you anything to suggest?

I am both amused and annoyed with the incident, as the men are really prominent in Vienna, and who beleive in you.

I have only two clippings this week, and send them.

Yours truly

O. Chanute

(1906)

Feb 5th 6

My dear Mr. Wright.

I have yours of Jany 31. I herewith mail you the Ill. Aero. Mitt for January.

I think that I now grasp your idea about "the Car" I will write to Pedley and to the Austrians, probably to-morrow, other business having hitherto prevented.

I return the letters to Besançon and to Capt Ferber. Also Ferber's own letter with a translation as faithful as I can make it. He is not reliable, as I hinted to him myself. He should not have published your letter, and yet the account which he gives of the state of opinion in France (which is different from what I supposed) renders it probable that it was for your best interests that he should leak. I think it not impossible that he will try to make a flight himself before April 5th and get hurt.

Are the French to send their operators to be instructed by you in this country? You might be at a disadvantage if you had to go abroad before receiving your money.

Yours truly

O. Chanute

I am very much amused to learn how Herring arranged the exhibits. I sent the Aero-club all told 15 models.

[1906]

Feb 5th 6

My dear Mr. Wright

You are aware that a translation of Moedebeck's pocket book is being printed in England. I have just received the proofs of my continuation of Lilienthal's chapter, the manuscript for which is in your hands, and of the additions I made thereto in September which I also sent you. In the latter I said of you:

"In 1905 the work has been continued by further perfecting the apparatus, and by learning its use and control under all circumstances of flight and of wind. Having spent a good deal of time and money in developing their machine to efficiency, the Wright brothers do not wish as yet to make its construction known."

Now, since that was written you have made public the performances of 1905. Shall I add to the text your letters to Alexander and to Besançon and possibly to others if you like? If yes, please indicate how best to bring them in, i e: as an appendix, or as foot notes? I may add that I do not fancy the latter.

Yours truly

O. Chanute

P. S. 6th Feb-

I enclose copies of my letters to Vienna and to Fedley — I could not resist the temptation to give Archdeacon a dig. If the Parisians get to laughing at him for braying too soon his influence will be gone.

(1906)

Feb 6th 6

Dear Mr. Wright

As you may have mislaid my additions to the Moedebeck article that I wrote you about yesterday I enclose a duplicate.

You might write on page 2 just what you think had best be added, whether to introduce an appendix of your own letters or otherwise.

Yours truly

O. Chanute

Missent and returned — now suppressed (1906)

Feb^y 14th 6

My dear Mr. Wright

I have yours of 7th & 12th inst. Upon the receipt of the former I sent off the Moedebeck proof, adding thereto Orville's letter to Alexander, and Vouching for its truth. I have used your own breif statement as a foot note to my cyclopedia article of which I send proof. I have had a good chuckle over the Sci. Am^n correspondance which I return herewith.

I think the developements you mention in Germany are not "strange". They are mean. The Kaiser had probably made up his mind to a war with France. The taking over of your machine by the latter causes him to pause, as he may not know that the sale is not exclusive.

Perhaps information to the Kaiser concerning the facts might change his attitude. It might be conveyed through Dienstbach if you are sure of him. He is, I beleive, a warm personal friend of Herring, and may be working to give the latter a chance to build a rival machine. I can write to Moedebeck direct, if you deem best and tell me what to say. Moedebeck writes to me very seldom now, probably believing me an auxiliary to the French, which I am not.

Yours truly

O. Chanute

(1906)

Feb 24th 6

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright.

I have received the February number of Moedebeck's paper, and will send it to you if you have not received yours.

I got a friend to give me the gist of it but did not like to impose on him for a full translation. I gather that the editor doubts the full truth of your acheivements, resents the allusion to the Kaiser as a disturber of the peace and asserts that there are experts in Germany who can fly as well as you, if not better.

If you have the Journal and a translation of the article, please have a copy made at my expense and send it to me.

Yours truly

O. Chanute

I also have the Aerophile for February.

(1906)

March 7th 6

My dear Mr. Wright

I have your letter of 2d, and am very sorry to learn that Orville's eyes are giving trouble.

The French expression "cherchant noise" litterally means "seeking a fuss", but, as you say, the matter is of no importance.

I thoroughly sympathise with all you say about Langley, and deeply regret that he died a disappointed man. He was much dejected when last I saw him.

You will find among the clippings which I sent you yesterday one announcing the suddent death of Mr. Edmond Archdeacon. I am not sure that it is the man who has said foolish things about you. His name was Ernest and he had a brother who was a deputy in the French chambers. If it be the aviator who is dead we may surmise that mortification at finding himself so completely in error may have had something to do in shortening his days, in which case our sympathy will also go to him; for he was a genial enthusiast whose only fault was that he talked too much.

What progress are you making in building your new machine and where are you going to try it?

Yours truly

O. Chanute

(1906)

March 18‾ 6

Dear Mr. Wright

I enclose a letter from Mr. Wenham which may interest you. Please return it.

I leave for New Orleans with my daughter tomorrow morning and expect to be back April 1‾.

I send you another lot of clippings.

Yours truly

O. Chanute

(1906)

March 18th 6

My dear Mr. Wright.

Since writing to you this morning I have received your letter of 17th, and I am very glad indeed to learn that your German patent is allowed. I enclosed a little clipping stating that the Germans were about to undertake the construction of war balloons and aeroplanes. It is not impossible that Mr. Herring may offer his services towards building the latter, so I think I will write to Major Moedebeck, who has left former letters unanswered, that your sale to the French is not exclusive.

I do not know who is the editor of the "Automotor Journal" but I have noticed, like yourself, that he has a level head.

I had a mighty good chuckle over your correspondence with the "Scientific American" and immediately sent it back to you, but through a stupid blunder of mine it went to Dayton Io. and got back only this morning. I now enclose it again and will be careful to send to Dayton. Ohio.

I also enclose a proof of the article for the "New Standard Encyclopedia" written about a year ago.

Yours truly

O. Chanute

(1906)

April 7 6

My dear Mr. Wright

I found yours of 1 upon my return and now have that of 5 inst.

I regret that your deal with the French was not closed, as delays may bring about complications, but I beleive that it will go through all right. I think I would have agreed to the going up to 300 metres after the other conditions had been complied with and terminated acceptance.

I told you that I taken the liberty of advising Moedebeck that your contract with the French was not exclusive. Having occasion to write to Major Baden-Powell on other matters I have to-day thrown another anchor to windward by saying:

"The Wrights are building another machine. It is my impression that their arrangement with the French is not yet fully closed, the Government having brought forward some additional requirements which the Wrights deem unreasonable. You know, I presume, that in no case is an exclusive right to be given."

He had said in his letter to me "We have all been much interested over here in hearing of the Wright's success. I hope we shall soon hear more about them."

Yours truly

O. Chanute

(1906)

April 9th 6

Dear Mr. Wright

I thank you for the cuttings from the Scientific Amn and from its supplement.

You may be amused with the further letter of inquiry from these parties which I enclose. I also send a copy of my answer.

I beleive the communication from "Livingston Wright" was written in the New York office.

Yours truly

O. Chanute

(1906)

April 19¯   6

My dear Mr. Wright

I had a telegram last night from Mr. Alexander: "will arrive Dayton friday morning. Must leave ten same evening for Washington."

As I have an engagement for that day I had to telegraph my regrets that I could not meet him. Please give him my best respects and wishes.

I have this morning a letter from Ferber, of which I send you the translation. Also one from Moedebeck of which I send a copy of all that relates to you.

I hope all this will result in placing your machine in the hands of the British. A result which has commended itself to me from the start.

Yours truly

O. Chanute

(1906)

April 30th 6

My dear Mr. Wright

I have yours of 28th and I thank you and Orville for the translation.

It rather looks now as if the British will be the first to buy and the French will have to take a back seat for a year. I hope that you have gathered in the $5000 forfeit.

That the U. S. patent has been granted is good news, in view of the fact that the office is so fatuous. - I have a letter from Mr. Geo. A. Wieczorck 1st Lft 17th Inf^y at Leavenworth, who says that "our army has not taken the interest in navigation of the air that it should" and asks for information to prepare a paper on the subject. I send him what is in print and refer him to various publications.

I shall be glad to know what your plans are as to preliminary practice, now that the negociations hang fire. I supose that your movements are being watched.

Yours truly

O. Chanute

(1906)

June 4th 6

My dear Mr. Wright.

I duly received yours of May 15th. I had hoped to have some information to convey, but my foreign correspondents have left me guessing. I have however an interesting letter from Mr. Montgomery, with photos, which I send herewith. He seems to get into antagonism with his associates and to meet with continued mishaps. I fancy that he has little idea of the troubles he will have, first to secure stability and then to apply a motor and propeller, if he ever gets as far as that.

My daughter is again in bad health and I am thinking of going on a trip with her. Should there be a prospect of your resuming your practice, please advise me, so that I can witness it if practicable.

Yours truly

O. Chanute

(1906)

June 11" 6

My dear Mr. Wright

I have your letter of 8th. I received this morning a letter from Mr. Cabot which I enclose herewith, and I suggest that you will extend your proposed trip to Boston in order to form his personal acquaintance. I have not advised him of the exact status of your negociations for a sale of your machines, leaving you to tell him as much as you may deem best. I think it may be wise to lay an anchor to windward by becoming acquainted with the Boston men.

I cannot yet tell when I can start on the trip with my daughter. There is a large sum of money, intended for the Kansas City building, which has been due to me since January and I am having trouble in collecting it, so that I have been compelled to borrow from banks. As soon as I can adjust this I propose to go on a trip, and will probably go to Gloucester Masstt.

Yours truly

O. Chanute

(1906)

June 17th 6

Dear Mr. Wright

I enclose still another letter from Mr. Cabot.

Please let me know when you propose to go East and return the letters from Cabot.

Yours truly

O. Chanute

(1906)

June 25˜ 6

Dear Mr. Wright

I have sent Mr. S. Cabot copious extracts from your letter of 21˜, which impresses me as very manly and sagacious.

I return herewith the letters of Mr. Godfrey M. Cabot and of Gen˜. Crozier and thank you for sending them to me.

I should like an opportunity to show the people in Washington some of your correspondence and the article in the Automotor Journal of the 30˜ of December in which it is intimated that you have been treated with unspeakable meanness.

Yours truly

O. Chanute

(1906)

July 24th 6

Dear Mr. Wright

I duly received yours of 4th July. I have been holding a reply in expectation of foreign news. This came this morning in a letter from Major Moedebeck which I enclose. Please advise me as to what answer to make. I do not advise you to publish photos. I expect some of your rivals will get hurt.

Is it true that both Paris & Berlin have finally declined your proposals, and have you gobbled the $5000 of the former?

In accordance with your permission to disclose privately past negociations I am preparing extracts from the correspondence which I will show confidentially to Mr. Sam Cabot, and I will advise you of what he says. I propose to go East about August 1st, to join my duaghters who are at Gloucester Mass^{tts}, and will pass through Boston. I would like to hear from you before I start.

I hope the new engine will prove a great success.

Yours truly

O. Chanute

[1906]

August 22d 6

My dear Mr. Wright.

Yours of July 25th was received. -- I spent a day with Mr. Cabot in Boston, calling with him upon friends interested in your work; notably Mr. Fish Prest of the Telephone Co. and Mr. Higginson "the leading citizen of Boston."

I left with Mr. Cabot my collection of clippings about you, and copies of extracts from letters concerning your negociations with our government, so that the rights of the question will be made known to the proper parties should you be criticized for dealing with a Foreign Government in advance of our own.

On my way back with my daughter I stopped a day in Boston, but Mr. Cabot was out of the city and I did not learn what effect the perusal had on his mind. I presume that he will write when he has anything to say.

You will have noted in the July Aeronautical Journal that both Maxim and Col Capper believe in your statement "to the last inch".

Yours truly

O. Chanute

(1906)

Aug 31‾ 6

My dear Mr. Wright

I have yours of 28‾ and return Ferber's letter. He must be pretty sanguine of success if he now resigns from the army. He has not written me for months.

I also return the clippings, which are interesting if true.

I am very glad to learn that your new engine is giving you satisfaction, and I hope that the occasion will soon come when it will be put to the practical use of a test trip.

I have not heard anything about Herring since the Aero Club exhibit covered him with glory. I did not know that he contemplated going to Germany.

I have no idea where the Gorlitz correspondent picked up that your surfaces have a depth of curvature of 1/19. You may remember that in your address to the Western Engineers you mentioned 1/22, and that I in my French article of 1903 mentioned 1/20, with advice to beginners to make it 1/25.

Is it possible that the ratio should have been taken from your patent drawings?

I expect to leave for British Columbia Sep 5‾ to be back about the 25‾.

Yours truly

O. Chanute

(1906)

Sep 7th 6

Dear Mr. Wright

I have your letter of 4th, and I herewith return the clippings which you sent.

I see that Santos Dumont stands a fair chance of being upset if his machine is as shown, with the wings at a considerable dihedral angle.

I enclose two clippings which indicate that Maxim is going over to flapping wings and one about the death of Tissandier. This was the architect who worked with his brother Gaston in experimenting with balloons.

I note a new danger from air ships. The sight is so absorbing that two of your Dayton men seem to have been run over by a locomotive while absorbed in watching an air ship, which I presume was Baldwin's.

I leave this noon for Vancouver.

Yours truly

O. Chanute

(1906)

October 7 6

My dear Mr. Wright.

Upon my return from the trip to British Columbia I find here the enclosed letters from Mr. Cabot and Mr. Renard, who both seem to think that you will have difficulty in selling your machines at the price asked. I think myself that it is very high, but an emergency may enable you to obtain it.

I had a call yesterday from a flying machine inventor who said that he had recently met a Frenchman who told him that the Wrights were now in a Fortress in France, closely guarded by many sentinels, and were experimenting with a flying machine. That having succeeded in evading one of the sentinels he had caught a glimpse of the flying machine which was of the double decked type.

Now can you prove an alibi, and if so who can the reputed American experimenters be?

I think, myself, that Esnault Pelterie is the man who is proceeding on the most rational lines.

I see that Archdeacon has promoted a new manifesto to raise a prize of 500.000 francs.

Yours truly

O. Chanute

(1906)

October 15th 6

My dear Mr. Wright.

I have your letter of 10th upon my return from Kansas City, where my new store house is approaching completion.

You are quite correct in saying that it is not the amount of money involved but the possibility of buying your machine cheaper which causes your clients to hesitate. The value of an invention is whatever it costs to reproduce it, and I am by no means sure that persistent experimenting by others, now that they know one success has been achieved, may not produce a practical flyer within five years.

The important factor is that light motors have been developed. As there are many shapes of birds, each flying after a system of his own, so there may be several forms of apparatus by which man may compass flight. Flapping wings for instance. I cheerfully acknowledge that I have little idea how difficult the flying problem really is and that its solution is beyond my powers, but are you not too cock-sure that yours is the only secret worth knowing and that others may not hit upon a solution in less than "many times five years" - It took you much less than that and there are a few (very few) other able inventors in the world. The danger therefore is that others may achieve success, and one (shall we say distressing) symptom is that, thus far, nobody seems to have been hurt in trying. This does not mean that I would advise you to "force a sale", but that I believe that if the only obstacle in the way was the question of price it would be wise to make a reduction.

I do not know the status of your negociations, but I imagine that the difficulties will be for the war departments to formulate specifications as to the performances which you can accept, and the question of granting long priority of use to the first buyer. I suppose you could sell at once if you granted an exclusive right to any one nation.

I enclose a clipping from yesterday's paper noticing an enterview with C. S. Rolls.

While in Kansas City I made a talk to my former fellow citizens and enclose clippings, incorrect of course.

I learn from Mr. Post that Mr. Herring has returned to New York (from where not stated) after "experimenting with engines during the summer."

Yours truly

O. Chanute

Have you seen pamphlets by Samuelson noticed in Scientific American July 7/06

November 1st 6

My dear Mr. Wright.

I have your letter of Oct 28th and do not agree with your way of thinking.

I presume that you have seen in the Aérophile for Sept and in the Aeronautical Journal for October (just received) that Santos Dumont made a short flight on Sep 13th and that the press dispatches say that he won the Deutsch-Archdeacon prize on the 23d of October, by flying over one kilometer, coming down with a bump. I fancy that he is now very nearly where you were in 1904. He seems to have found out that the dihedral angle of the wings, which Langley used, is unsafe in side winds and he is putting on flexible tips. He may hereafter meet with a serious accident and he may not.

I suppose that you can do no better than to await the result, for the outcome will depend not only upon the "mental ability" which you misunderstood me as constituting the safe cause, but upon mechanical instinct and that conjunction of circumstances which is sometimes called luck.

Be this as it may I suppose that you realize that Esnault-Pelterie, Ferber, Bleriot & Voisin, Barlatier & Blanc, Vuia, Cornu, Cody, and a German syndicate are also all experimenting with Dynamic flying machines. Some of them may develope something. See the remarks of Col. Capper in his lecture on page 62 of the Aeronautical Journal for October. His attitude appears to be one of expectancy, so that I do not believe that it would be wise to be very stiff as to terms should a good offer come from the British war office.

I am pleased to learn of the improvements which you have made in your motor. I infer that it now weighs about 7 pounds per horse power and I send you an advertisement of the machine "Antoinette" built by Levavaseur, which Santos Dumont is said to have (50 H. P.) on his "Bird of prey". I suppose that the weights given leave out indispensable adjuncts.

Since writing to you Oct 15" I found that I could get Samuelson's pamphlets from Spon & Chamberlain 123 Liberty St New York, and now have his "Resistance of air" & "Flight velocity" I would not exactly call him a crank, but a "sooner" who jumps at conclusions from insufficient premises. I do not beleive that he will find an American patron, although it is not unlikely that wings are better propelling agents than screws.

I shall hope to meet Alexander next December.

Yours truly

O. Chanute

(1906)

November 4th 6

My dear Mr. Wright

I have your letter of 2d, and as I infer therefrom that you have not seen all the press dispatches concerning Santos Dumont I send you my own file of clippings, which please return to me when you are through with it.

Did I write you that there is to be a meeting in memory of the late Secretary Langley in Washington on Dec 3d? Dr. White is to deliver an address on his life and services, - Prof. E. C. Pickering is to speak of his work as an astronomer, and I have been asked to deliver an address on his contributions to aerial navigation. I have begun writing that address now. Kindly advise me soon how much you feel that you have been assisted in your own work by Langley's publications and labors, and give me such hints as may occur to you. Of course I will not give you as authority if you do not desire to be specifically mentioned.

I have a letter from Alexander stating that he will arrive in New York about dec 2d. As I am to be East about that date I expect to meet him and would be glad to meet you also.

Yours truly

O. Chanute

(1906)

November 11ˉ   6

Dear Mr. Wright

I have your letter of 8ˉ. Your appreciation of Langley's work quite agrees with my own as already written. It was his own faith in the possibility of success which was most inspiring, but he also gave great service by his data as to the power required for aerial support.

It turns out that you were right in your own surmise of what Santos Dumont has accomplished. I enclose a French clipping received yesterday, which states that he only flew 60 or 70 meters on a straight course, thus winning the Archdeacon *cup*, instead of flying 1 kilometer in a circle and thus winning the Deutsch-Archdeacon *prize* of $10.000 as stated in the foreign despatch which I sent you. Santos is not now as far along as you were in 1903.

I do not understand what you have in mind in saying that "The nature of the flying problem seems to us to absolutely forbid a quick solution." For if it involves discovering a secret, it is possible that other searchers may stumble upon it.

Yours truly

O. Chanute

(1906)

Nov 28th 6

My dear Mr. Wright.

I have your letter of 18th. I expect to leave here on the 30th, and to be in New York Dec 1 at the "Park Avenue Hotel" 35th St and 4th Ave, European plan and charges moderate.

I enclose a letter from Capt Ferber of Nov 12th. Please bring it with you if you come, or return it to me here. I also enclose an article by Ferber, which indicates that he is going in with Archdeacon. The latter has money but not much mechanical talent. I suppose that you have seen the enclosed despatch from London, and I am glad to infer that you are nearer to making an agreement with England than with France.

I still differ with you as to the possibility of your being caught up with if you rest upon your oars. It is practice, practice, practice which tells and the other fellows are getting it. I did not beleive that there was a secret, but your previous letter squinted that way, and I wanted to bring you out.

Yours truly

O. Chanute

(1906)

RECEIVED AT 27C.FA W 8 Paid

EH.NewYork Dec 5/06

Wright Bros,

1127 W 3rd St,

Dayton,O.

Am at Everett House no rooms Park Avenue

O. Chanute

851am

(1906)

Dec 22d 6

Dear Mr. Wright.

I have your letter of 20th. I have known Mr. Flint for 25 years, but not closely, having had no business relations with him. I had telegrams from him on the 12th & 15th and a friendly letter of 20th asking me to come to New York to talk about your machine. I understood that he is a very rich merchant who has had extensive dealings with the South American republics and with European war departments.

The terms and price ($500.000) which he offers you seem much better than I thought possible but there remains the moral question of what precautions should be taken if the invention passes into the hands of a single nation.

That Government, I believe, would be Russia. I wrote a letter November 17th to Mr. Georges Berthenson, a surgeon attached to the Aeronautical Park at St. Petersburg, in which I gave an account of your performances and now have his letter of Dec 1st in which he says that he has recommended your machine to his Government. Its purchase may mean a new war against Japan and much bloodshed.

I do not now see clearly what precautions should be taken besides those you mention, but will write again. If you have to go abroad to teach others you should leave behind you full data of your machine in case of accident.

Yours truly

O. Chanute

(1906)

Dec 28 6

My dear Mr. Wright.

I have been thinking over your pending negociations and have not been able to evolve any better precautions than those which you mentioned, i e: "to have the priviledge of going for prizes" (this will make a market for machines) and "to publish any thing you choose after a limited time" - (this may avoid any undue advantage taken by one purchaser over another) but I would not make that time more than one or two years, and I should want the money paid before entering any military service.

In connection with this I enclose a translation of a letter just received from Ferber, in answer to my enquiry wherein you had been "idiotic". There is some truth in his argument that it is better to sell many machines at a moderate price than a few at a very high price, and if I understand you correctly, this seems to be Mr. Flint's idea also.

I enclose a clipping stating that you have sold to the U. S. government. That part of the statement which says that I posted up President Roosevelt is without foundation.

Yours truly

O. Chanute

(1907)

January 27 7

Dear Mr. Wright

Since my receipt of your letter of Dec 29 I have been in Kansas City, settling the accounts for my new building which has cost more than estimated. Since my return I had a pleasant call from Mr. Post who said that he expected to call upon you the next day.

I have no news which is likely to interest you but I find a large pile of clippings which I have not had time to open. I sent you those which I had read previous to my trip to Kansas City and also returned your own clippings which you were good enough to send me.

I think that Mr. Alexander mistook the name of the paper containing an account of the French negociations. I have just looked over the last "Aérophile", "Aéronaute" and "Aéronautique" and it is in none of them. I scarcely beleive that he was trying to draw you out but I own that I was rather surprised at the indifference which he expressed as to your negociations with the British government.

I shall be glad to have news from you

Yours truly

O. Chanute

(1907)

January 30~ 7

Dear Mr. Wright

I have your letter of 28~. I beleive that the first proposition mentioned, i e: $50.000 and expenses for a private exhibition to the Czar and 90 °/o of sales up to $500.000, with an equal division after that will yeild you the greater reward, particularly as I do not see how you can "retain full control of the terms and places of selling" unless you go along with your agent. You can lay down the general terms required in your agreement with him and you can enjoin being consulted about deviations asked for, but the agent must have some latitude to effect sales.

It seems probable that the first sale will be to Russia, and in this connection I send you my correspondence with Berthenson, the surgeon (half cracked) of the Aeronautical department at St. Petersburg. He consulted me about a mixed balloon and aeroplane apparatus in letter N° 1 - I answered that the problem was solved (see translation) and in letter N° 2 he said that he would advise his people. He seems to have done so.

I also enclose Mr. Flint's letter to me. Please return these various documents when you have got through with them.

Yours truly

O. Chanute

(1907)

March 22d 7

Dear Mr. Wright.

I duly received your letter, returning the communications from Russia and from New York.

I have also received the Bulletin from Koutchino and have been endeavoring to find leisure to examine the results, but other engagements have prevented.

I have received from the Secretary of the Jamestown Aeronautical Congress a request for models &c to be loaned for exhibits. Unfortunately I have given away all of mine to the Aero Club and to the Smithsonian Institution, so that I have nothing to show.

Kindly advise me whether you expect to exhibit your gliding machine which was left at Kitty Hawk. If so I should like you to send also the Multiple wing and the oscillating wing machines which were also left here, and I would defray the expense of putting them in order.

I hope that you are making good progress in your negociations.

Yours truly

O. Chanute

(1907)

April 15th 7

My dear Mr. Wright

I have yours of 9th, and enclose a letter received from Major Moedebeck a few days ago, which please return. In spite of the bad English you will probably make out that he beleives you to be in danger of being superseded, a view which I have advanced several times. I have felt, however, that I might be wrong, and now beleive that the results of experiments will determine the question within the next few months.

Concerning the Multiple wing and oscillating wing machines, if they are still in existence and you send your own machines, I would like to have them put in order at my expense and forwarded along with the others to Jamestown. It must be clearly understood, however, that those machines are yours, to be dealt with as you see fit, my proposal to defray expenses simply arising from the wish not to be totally unrepresented at Jamestown, as I have destroyed all of my models and relics.

I am disappointed to infer from your letter that you are not in treaty with the U. S. Government. The newspapers have repeatedly stated that you had sold.

Yours truly

O. Chanute

(1907)

May 2^d 7

My dear Mr. Wright.

I have your letter of April 22^d. I do beleive that events are coming your way. The breakage of the French flying machines and the fiasco of the British exhibition, which you will have seen in the clippings, tell in your favor. Did you see in the Illustrated London News of April 13" your picture on a glider labelled Orville. This follows the blunder of Mr. Casson in the American Magazine who transposed your names under your portraits. I was disappointed in his article, by the way, as sacrificing accuracy to picturesqueness. He did not send me a proof as agreed, or I would have cut out that paragraph which represents me as coming out of the bushes and making an absurd speech to you.

If I were not afraid of interfering with your plans and wishes I might easily stir up the U. S. War Dept. I was called on a few days ago by a newspaper reporter who said that the American people will mob you if you sell your invention abroad and it is used against the United States. I enclose an inacurate report of the enterview, and a still more amusing French clipping.

Yours truly

O. Chanute

(1907)

May 9th 7

Dear Mr. Wright.

I find that I have given away all my copies of your 2d paper "Experiments and observations in soaring flight."

Could you send me half a dozen copies for distribution?

Yours truly

O. Chanute

(1907)

May 19~ 7

Mr. Orville Wright
Dayton. O.

My dear Orville.

I have a letter from Wilbur, written on the train May 16~, saying that he sails for Europe on Saturday 18~. My best wishes go with him.

He says that the copy of the letter to Alexander reproduced in Pocket book of Aeronautics contains a number of blunders. Please indicate what they are. The letter was copied from the Aeronautical Journal for January 1906.

Please advise me whether I can be of service with the Board of Ordnance & fortifications.

Now that success and active operations are in sight, you will probably need more help.

I have been for the past year in touch with a 15 year old boy, L. J. Lesh, who displays quite extraordinary aptitude for aeronautics and who has made a number of gliding experiments. I beleive him to be thoroughly honest and discreet. Please advise me whether you are likely to want him. I have not mentioned the matter to him.

Yours truly

O. Chanute

May 24" 7

Mr. Orville Wright
Dayton. O.

My dear Sir.

I have your letter of 20th with the enclosures and herewith return the letter, having taken the liberty of making copies of them, which I, of course, will make no use of without your consent. It is my impression that you will be invited to Washington, at no distant day, to have a talk with the President, and that a sale will follow.

Did you get a copy of a paper, by W. R. Turnbull, entitled "Researches on the forms & stability of aeroplanes". He seems to have re-discovered the advantages of bird like fore and aft sections and apperently means to take out patents for them. I do not know who he is but have written to find out.

Please thank your sister warmly for a note which I got last night, giving me Wilbur's addres in London. I did not have it, and I hope I will have occasion to use it.

Yours truly

O. Chanute

June 4th 7

Mr. Orville Wright.
Dayton. O.

My dear Orville.

I have your very interesting letter of 2d and I am glad to know that you are in treaty with the Ordnance Board. I presume that your price includes full instructions and I consider it reasonable.

I think Wilbur's views will be modified by his journey. You probably know that new aeronautical magazines are shortly to be issued, one in St. Louis and the other in New York. Having been asked by the first to prepare an article I chose "Pending European experiments in flying", in order to study what has been done more closely than I had in cursory reading. The result has been to convince me that the Europeans are catching up with you more rapidly than I had beleived. Of course they will meet many mishaps and breakages, but they are learning from each failure, especially as the various aviators are present at each other's trials and are educating each other. The men most likely to succeed, as I think, are Delagrange, Kapferer and Zens brothers. Santos Dumont is on the wrong track, but he is not bigoted and sometimes changes his plans at short notice.

Yours truly

O. Chanute

(1907)

June 10th 7

Mr. Orville Wright
Dayton O.

My dear Mr. Wright.

I have your interesting letter of 8th and I enclose one from Alexander, just received, which please return when read. You will note that he says that you ought to make "everything public". I do not agree with him but I beleive it would be well to say more about your performances. I have hitherto refrained from doing this, for fear that I might say too much. Now I have letters from the "Revue de l'Aviation" and from "La Conquete de l'air" (Belgium) asking me to write something about the Brothers Wright. Would you deem it wise to say in other words about what I wrote for the "N. Y. Herald" and for "Navigating the air"? About a month ago I declined to contribute an article to "Ballooning and Aeronautics" of London, for fear that inferences might be drawn as to what kind of a machine you have. I enclose a few French clippings which you can add to your files.

I shall be glad to know what you hear from Wilbur.

Yours truly

O. Chanute

(1907)

June 26"   7

Mr. Orville Wright
Dayton O.

Dear Mr. Wright.

I have your letter of 20". Also one from Alexander here enclosed, to which I answered that I did not know whether the report was true or not.

The May number of the "Aéronaute" states that Mr. Armengaud, President French society Aerial Navigation, stated in meeting April 25" that your French patents were invalid for non user in three years. He stated that he would make further report at next meeting.

Having been asked, some time ago, to prepare a paper for the St. Louis Aeronautical magazine (which has not yet materialized) I thought it a good opportunity to make a study of what has appeared in print during the last two years about pending European experiments in flying. I have just finished and I enclose a copy of the paper which you may keep. If there is any expression which you deem injudicious, please let me know quickly, as the paper may be called for any time.

Yours truly

O. Chanute

July 11th 7

Mr. Wilbur Wright
Care Hart. O. Berg,
Hotel Meurice - Paris.

My dear Mr. Wright.

I have your letter of June 27th and I am very glad to hear from you, but I am somewhat chagrined by the enclosed clipping which states that you are not making much headway in your efforts to sell your flying machine to the French government, after failing in Germany. I hope this is not true, yet if it results in your selling to England, as I have always desired, I shall be pleased. I wrote to Alexander, some time ago, that I beleived his government had made a mistake by not absorbing your invention at the beginning. I also wrote to the "Conquête de l'air" of Brussels in answer to an enquiry, confirming the accounts which have already been published of your performances. I suppose that the letter will appear in that paper. Have you changed your opinion that you will not be caught up with for five years, now that you have seen what other aviators are doing?

Yours truly

O. Chanute

July 15   7

Mr. Orville Wright
Dayton O.

Dear Mr. Wright

I have your letter of 14", and I am glad, for your sake, that you have closed a contract "upon more favorable terms than those of a year ago."

I confess that I did not expect this, as I saw in despatches to the Evening News of this city, July 10", that Wilbur was making no headway in his French negociations and talked of going to England. I sent him the clipping, and I send to you those that have accumulated in the last few days.

I regret, like yourself, that the flights are to be made in France, as you will there be at a disadvantage. I also regret that Deutsch has withdrawn, as he has the reputation of being a good straight man.

Will you want to avail of young Lesh, of whom I wrote some time ago? He went to Montreal some days ago, but I have not his address.

You ought to leave with you father or sister a full written account of the features which make your machine a success.

Yours truly

O. Chanute

August 5ᵗʰ 7

Mr. Wilbur Wright
Hotel Meurice
Paris.

My dear Mr. Wright.

I am glad to learn that you have become acquainted with my friend Pontzen. He is extensively acquainted, thoroughly reliable and of sound counsel.

I understand the special correspondent of the Daily News of Chicago in Paris to be Mr. Lamar Middleton. You ought to cultivate him so that he will not misrepresent you in future. I send his last dispatch.

I had surmised the facts about Capt Ferber to be as you state and I have no doubt that many of the people with whom you have to deal are intensely jealous of you. I trust however that you will overcome all difficulties placed in your way.

If there is anything on this side of the water that I can do, please command me. I understand that my friend Col Glassford is to be placed in charge of the U. S. Signal School at Omaha, with special contemplation of aeronautical developements.

With best wishes for your success.

Yours truly

O. Chanute

Sept" 14" 7

Mr. Wilbur Wright
Care Hart O. Berg
11 D Regent St. Waterloo Place
London S. W.

Dear Mr. Wright

I have your welcome letter of Sept 2d and I own that I am surprised that you have not closed a contract with the French. I felt confident that the strife which has broken out at Casablanca would incline them to pay almost any price for an apparatus which might be used to impress the Moors into peace and so save great military expenditures. There must have been some obstructions in the way of which I am not advised.

You say that "the future negociations will not contain any provision for a period of exclusive use." But may not compel you to greatly reduce your price. I hope that you will succeed in effecting a sale, although it does seem to me that if Germany purchases on those terms it will not make for peace.

I have not seen the story to which you allude concerning your American negociations. In fact the newspapers which I read have said almost nothing about you. I beleive I sent you all I saw. I occasionally see something among my British clippings and I now enclose the last two.

I suppose that the French papers say much more and pitch into you savagely, but I see few of them. I note however that "L'Automobile" for August 24", after differing from myself as to the probable early success of "Wheeled grasshoppers" gives a description and criticism of your apparatus and pronounces it useless for practical war purposes. It does not seem to have occurred to the writer that the merit of your machine is in the perfect control and that it can be changed into a wheeled machine.

I beleive that my friend Col Glassford has been delayed by some work in Alaska. I expect him to call on me when

on his way to Washington and to talk over the aeronautical situation. He wrote that it had been found that the department has heretofore had the most crude ideas in the matter and that it was desired to enlist the co-operation of those who had studied the progress of aviation and kindred work, so as to make progress which might not be possible otherwise. I shall be glad to learn from you whether something can be informally said as to your views concerning an arrangement with the U. S. government.

Yours truly

O. Chanute

Dec 1" 7

Mr. Wilbur Wright
Care Hart O. Berg
11 D. Regent St. Waterloo Place
London S. W.

Dear Mr. Wright

In answer to your letter of Sep" 2d, I wrote you Sep 14" and since then have no letter from you. The newspapers have stated that you had been in Berlin, in St. Petersburg and in London, as well as in Paris, but with no intimation that you have closed any of your negociations. I hope that you have, for the French seem to make greater progress than you anticipated and may detract from the value of your invention and skill.

A press dispatch stated a week ago that you had sold one machine to the U. S. government, but that some Army officials denied it. I am in correspondence with Col Glassford at Omaha and he writes that the Signal Service is talking of balloon experiments.

It is said that no news is good news, yet I shall be glad to have a letter from you saying that you and Orville are in good health and have succeeded in securing proper rewards for your acheivements.

Yours truly

O. Chanute

(1907)

Dec 4th 7

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright.

I have your welcome letter of 3d and am very glad to learn that you are in good health and back in this country.

Not having heard from you since Sept 2d I became anxious lest you were sick and wrote to you in care of Mr. Berg, in London, a few days ago.

I infer from your letter that you have effected some sales in Europe and I shall be very glad to receive the long letter which you say that you intend to write.

I hope that you will succeed in making an arrangement with the U. S. It is my impression that the officers of the Board of Ordnance and Genl Allen have only very crude ideas on Aeronautical matters. They are just as likely to jump down on the wrong side as to remain perched on the fence.

If I can be of use to you please command me.

Yours truly

O. Chanute

December 15th 7

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright

I am very glad to receive your letter of 9th giving an account of your negociations in France and in Germany. I am about to file it with your other letters and it may be that in a score of years it will prove of historical interest.

I regret that you have not made more positive sales. It looks to me as if the government officials are keeping you dangling in the expectation that some of your competitors will discover the secret and they can get your invention cheaper. The newspapers meanwhile represent that Esnault-Pelterie and Farman are making great progress, so that it may take less than the five years you estimated for one of them to catch up with you.

The final result depends on future events, and I have been surprised that no serious personal accident has occurred. My feeling would be to sell, even though you do not get your original price, which I always thought too high.

You say nothing about negociations in England Austria or Russia, and I hope that your prospects are better in those countries, as well as in the United States. As to the latter a friend tells me that he saw a press despatch a few days ago, stating that the U. S. government had given you an order for a machine. I hope that is true. I marvel, however, that none seem to insist that they shall have an exclusive right in the invention.

I thank you for sending the memorandum for Mr. Flint and the translation of the Hildebrand letter in the "Local Anzeiger". The former I return herewith and the latter I keep for a few days in order to make a copy.

How did Orville manage to get Malaria, in Paris of all places. I supposed that French cooking was building him up, although not to the extent shown in the enclosed picture, in which I hardly recognize him.

Please present my respects to your father and sister, let me hear from you again and beleive me,

Yours truly

O. Chanute

I have taken the liberty of having the Geographic Magazine sent to you for one year.

December 16¯ 7

Mr. Wilbur Wright
Dayton O.

Dear Mr. Wright.

I herewith return the translation of the Hildebrandt article in the Lokal Anzeiger of Berlin. I note that he, like others, wants to employ native talent to work out a flying machine for his country. I know Hoffman, his ideas run to complications.

Captain Hildebrandt told me when here that he had been told by Herring in New York that he (Herring) knew your secret, having had it unconscionbly divulged by two eye witnesses who had described the machine as it appeared in the air. What that secret was Herring did not say.

I imagine that there have been a number of pilgrims to Dayton to enquire particularly about the appearance of your machine and that some of your competitors have been inspired by the reports received. I do not now beleive that if your apparatus was seen in the air alone your secret would be surprised.

Yours truly

O. Chanute

JanY 4th 8

Mr. Wilbur Wright
Dayton O.

Dear Mr. Wright.

I am glad to infer, from your letter of the 1st that you consider the net advance of your competitors to be less threatening to your interests than I feared, and that the condition of your own negociations is satisfactory to you.

I suppose that you have seen the outrageous things that Archdeacon said about those matters at the Aero-Club dinner of Nov 7th. He is a "light-weight", yet such statements exercize an influence.

I yesterday saw, for the first time, the advertizement of the Signal Corps for flying machines. Do you intend to compete, and will you submit the _full_ plans of your machine, or will you be satisfied to file the detail plans" which the St. Louis "Aeronaut" promises to publish next month? I am curious to know the origin of the latter.

Did you see Alexander in New York?

Yours truly

O. Chanute

Did you revise the McClure article. It was sent to me in your absence and I thought it quite good.

Would you object to Means reprinting your two papers given to the Western Society of Engineers?

Jany 19th 8

Mr. Wilbur Wright
Dayton O.

Dear Mr. Wright.

I have your letter of 16th inst. I deem your criticism of the signal service advertizement perfectly just, particularly that clause which requires a bond to forfeit a sum equal to the full bid if the machine fails to perform what nobody - not even you - has yet accomplished. My own judgment is that, in your place, I would either decline to bid at all upon the ground that the conditions imposed are unreasonable or that I would bid, (if you are sure you can get the 40 miles an hour every time,) a very much larger sum than the twenty five thousand dollars which you mention in your letter.

I suppose that you have seen the Am. Aeronaut. Dientsbach, who seems to have queer conceptions as to confidential letters and communications - has really done a clever peice of detective induction, but I fancy that he has missed the main feature that enables you to sail steadily on circular courses. Although not so intended, the article will do you good because of the admission of an oponent that you "can fly when and how you want to".

I was asked by a Chicago newspaper for my opinion of the Farman performance and I enclose the result. I suppose that the Voisin design was based upon a description by Fordyce of the photographs which you showed him of your machine in the air, but that he is no further ahead than you were in 1904. Danger however, looms up from two communications in the last "Aérophile" (December). One from Goupil, which is weak, and one from a Mr. Lucien Boudin (dont know about him) who has tumbled to the idea that centrifugal force must be overcome and proposes four methods, while he recommends "shifting the weight". I have beleived for the last 18 months that this [i] what you do, but forbore from asking questions. Let me know if I am wrong?

Do you know whether the Signal Service has an appropriation, or will the bids be subject to inane discussion in Congress?

I think myself that it is unfortunate that you did not organize a sustaining company at the beginning and feel that the eventual financial result to you depends upon the unpleasant eventuality of serious accidents to some of your competitors.

Yours truly

O. Chanute

[190]

February 20^{-} 8

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright.

I received your letter of 3^{d} just as I was leaving for Kansas City on business and have had no time to write sooner. I regret to find that our views still differ as to the eventual business outcome of your procedures.

I note, however, that you have been awarded a contract to furnish a flying machine to our government for $25.000 and that you say that you have assurances from the U. S. war department releiving you from fears as to the bond. I hope that you will have as great a financial success as the mechanical success which I expect you to attain.

I beleive that you do not do full justice to Mr. Turner for the McClure article, He wrote me that he had endeavored to be as exact as possible and to add nothing of his own to what you actually said. If he has misrepresented you why do you not write to him.

I have never seen copies of your patents. Kindly give me their numbers and dates and I will send for them. Kindly send me also 5 or 6 copies of your second paper to Western Eng^{-} (August 1903) as I am completely out.

Yours truly

O. Chanute

1908

March 20th 8

Mr. Wilbur Wright
Dayton O.

Dear Mr. Wright

I received your letter of 8th a few days ago upon my return from New Orleans and I am glad to have a clearer understanding of your attitude towards the McClure article.

Mr. Means wrote to me: "Have you seen the article by George Turner in the Feby McClure? That contains what seems to me a very strong plea for financial encouragements to the Wrights". — A friend in Kansas City sends me the enclosed cut, which will probably amuse you.

I thank you for the copy of your patent & the pamphlets. I am glad to learn that you are taking out more patents. You may remember that I suggested this three years ago, and I am especially pleased to know that the work on parts for new machines is almost finished, as I beleive that the first demonstrations should take place in this country. How soon will you be enabled to proceed to preliminary trials and adjustments, and how are you going to secure privacy in doing it? I am hoping to be able to go to Europe this summer and endeavoring to arrange my wood preserving business with that view.

Yours truly

O. Chanute

(1908)

April 12th 8

Mr. Wilbur Wright
Kitty Hawk, N. C.

My dear Mr. Wright

I have your letter of 8th and I congratulate you upon your French arrangement. 500.000 frs cash and one half founder's shares seem to me preferable to the hope of a sale to the government.

I think that you are very wise is beginning your practice, as soon as possible, and I had an impression that Kitty Hawk would be selected as being both secluded and near to Washington.

I see in l'Aérophile that you have bought 7 French motors of 40 H P each, and I hope that they will give you full satisfaction.

I leave here next Wednesday (15th) for New York to try to collect some money from a Railway for ties treated. I may possibly go on to Washington and if it should chance that I can be of service there please command me. You can reach me by letter or telegraph at the Century Club 7. West 43d St on the 16th & 17th. I have not determined upon a hotel.

Yours truly

O. Chanute

Will keep confidential your French arrangement unless you desire me to make it known.

July 22d 8

Mr. Wilbur Wright
care H. O. Berg - 11 D. Regent St
London S. W.

Dear Mr. Wright.

I have your letter of 10th and am glad to know that your scalds (which were reported by cablegrams) have healed without complications.

I fear some of our letters have miscarried. I wrote you at Kitty Hawk April 13th that I was going to New York and you could reach me at the Century Club, 16th & 17th. Since then I have heard nothing until the present letter. I do not know where Mr. Alexander picked up the notion that I was going to Europe.

I had occasion to say something about you in a paper to the Aeronautical Society of Great Britain and in one to the Illustrierte Aeronautische Mitteilungen. Of the latter, Col. Moedebeck writes that he will thereby be able to "rehabilitate in Europa the good meaning for the Wright brothers upon their merits", as he now writes me in English.

I regret to learn that you are not more ably assisted by your helper but I trust that your own resouces will be ample to achieve complete success. I shall look for Cablegrams in the press about August 1st and I shall hope to hear from you again.

Yours truly

O. Chanute

(1907?)

August 25 8

Mr. Wilbur Wright
Care Hart. O. Berg - 11 D. Regent St
London. S. W.

My dear Mr. Wright

I have been much gratified in reading, from day to day, of your successes and triumphs in France and it is pleasant to learn that frank admiration has succeeded distrust. I hope that no untoward accident or incident will retard your final success.

I have a letter from Captain A. Hildebrandt Kirchstrasse 2 - Charlottenburg, near Berlin, Germany, who asks me give him a letter of introduction to you, so that you may invite him to see some of your experiments. You will remember that Captain Hildebrandt, who came to the United States last October with the German aeronauts, went to Dayton to investigate and wrote a number of articles in German periodicals expressing absolute faith in all your statements. I think that he can be trusted to keep to himself any thing that you may want to keep secret.

Yours truly

O. Chanute

I enclose his address.

August 25~ 8

Mr. Wilbur Wright
Le Mans, France

Dear Mr. Wright.

Permit me to make you acquainted with Captain A. Hildebrandt, whom you will remember as the first European who did you full justice in the various articles which he published in the German papers upon his return from America last year.

You will confer a favor upon me by giving him full opportunities for witnessing your experiments. You will find him entirely reliable

Yours truly

O. Chanute

Cosmos Club
Washington, D. C.

Sep 29, 1908

My dear Miss Wright

I am inclined to beleive that the account which reached you was greatly exagerated. I met Sergeant Downey after I left you and spoke to him about the occurrence.

He says that Dr. Bell went in the shed after almost everything was packed up, but there was no cover on the aeroplane box. That a dispute arose about the width of the wing and Dr. Bell said, "Well I have a tape in my pocket and we will measure it." That this was the only measurement taken is what I gathered, but you had better see Sergeant Downey when opportunity serves and get an understanding of what occurred.

Yours very truly

O. Chanute

(1908)

October 7¯ 8

Mr. Wilbur Wright
Le Mans - France

My dear Mr. Wright

When I left Orville, Sep¯ 30¯, (to meet my people in New York on return from Europe) he was pronounced quite out of danger and his broken leg had so knitted that the surgeon told me that it would not be more than 1/8 inch shorter than the other. His temperature, which had been 101 4/5° part of the time, had become normal, and although he was still weak, (having been fed with liquid food) he had recovered his pluck and mental poise; the old genial smile had come back.

He had so endeared himself to all the Army officers and men with whom he had come into contact, as well as to the hospital attendants, that they were eager to do all they could for him, but, of course, a military hospital is not as comfortable as one's own home. At the Cosmos Club, where he had been staying, he had become very much liked and the members kept continually asking about him, only regretting that the surgeon's orders prevented calling upon him.

Your sister has been devotion itself. Fearing that he might lack something she stayed up at the hospital every night and deprived herself so much of sleep that I ventured to remonstrate with her about it. She then said that as the danger of complications seemed to be over that she would take better care of herself, go down to Washington to sleep, and return to Dayton as soon as she felt that she could do so.

She has, of course, advised you that Orville will have to remain at the hospital about a month more and then can go home on crutches.

I congratulate you heartily upon the magnificent success which you have acheived in France, upon the recognition which is now accorded you and upon the prospect that you will reap a fortune from your labors. The newspapers have said that Mr. Weiler deems the first $100,000 practically won and has

given an order for another $100,000 worth of machines. I hope that you will occasionally find time to give me news of yourself.

Yours very truly

O. Chanute

P. S. Just as I was writing the last paragraph I received your postal card of Sep" 28", containing your little joke. Dear me! how thin you have grown! Your sister said that you were emaciated and nervous but I had no idea it was to this extent.

(1909)

March 9th 9

Mr. Wilbur Wright
Pau - France

My dear Mr. Wright

This will be handed you by Mr. G. Crosland Taylor, whose clever paper on "Flying devices", discussing the various materials which can be used and describing his own aeronautical experiments, with various forms sustended from a pole, was published in the proceedings of the Conference of 1893 on Aerial Navigation, and has been alluded to in correspondence and conversations between us.

Mr. Taylor desires to know you and I feel sure that the acquaintance will be mutually pleasant.

Yours truly

O. Chanute

(1909)

May 19~ 9

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright.

It is with great pleasure that I receive your friendly letter of 17~ and the good news about all of you which it contains.

I have, of course, rejoiced over your triumphs in Europe and was particularly gratified with the sensible and modest way in which you accepted your honors, both abroad and since your return to this country. It encourages the hope that you will still speak to me when you become millionaires.

Please tell Miss Katherine and Orville that I congratulate them upon having seen the sights of the "Eternal city" under such happy auspisces.

As for myself, my health is good, but I begin to feel advancing age and my capacity for work is being diminished. I have lately bought a house and given it to my daughters, and I shall hope to receive you in it, if your engagements bring you this way.

I do not yet feel certain that I will be able to go to Washington to see you fly, but I shall hope to do so.

Yours truly

O. Chanute

- (1909)

June 15th 9

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright.

I thank you warmly for your letter of 8th inst, giving me an account of the causes and eventualities which led to the accident to Orville and to Selfridge on the 17th of last October. This is the first complete statement which I have received, as I would not let Orville talk about it when he was in the hospital, and I am very glad to be able to add it to the file of your letters, describing the evolution of your invention, which will hereafter constitute historical documents of great value.

You must be now pretty well satiated with glory. The harvesting of prizes, the receiving of unstinted praise, the reception of numerous medals are now about to be capped by the acclaim of your fellow townsmen in the carnival which is to occur to-morrow, and I beg to add my own congratulations for the great success which you have achived.

You state that this last demonstration was in opposition to your own wishes. I know that the reception of such honors becomes oppressive to modest men and they would avoid them if they could, but in this case you have brought the trouble upon yourselves by your completing the solution of a world old problem, accomplished with great ingenuity and patience at much risk of personal injury to yourselves, and I hope that when the present shouting is over you will continue to acheive further success and to receive ample rewards of all kinds.

Please present my best respects to your sister, to Orville and to your father and beleive me.

Your friend

O. Chanute

- (1909)

Dec^r 23^d 9

Mr. Wilbur Wright
Dayton O.

My dear Mr. Wright

I beg to tender to yourself, to Miss Katherine, to Orville and to your father my best wishes for a merry Christmas and a happy new Year. May all your desires be acheived and your anticipations fulfilled.

I am gratified to learn that all of you are in very good health and that your arduous labors of the past two years have left you all much stronger in every way than when you went away.

I regret that I was unable to go East to see you and Orville fly during the past summer and to talk over old times. My own health is good but I am now 78 years of age, and less inclined to travel than heretofore, besides having some business matters which kept me at home. I have for the past weeks been compiling an account of the present status of aerial navigation for a paper which I am to read before the American Association for the Advancement of Science, which meets in Boston on the 27^h. I am hardly through yet.

Yours truly

O. Chanute

1910

January 23d 10

Mr. Wilbur Wright
1127 West 3d St.
Dayton O.

Dear Mr. Wright.

Being misdirected, your letter of 20th was somewhat late in reaching me. I return the envelope.

The clipping which you enclose (returned herewith) is the first which I have seen from the New York World, referring to myself. I shall be glad to see the others.

This enterview, which was entirely unsought by me, is about as accurate as such things usually are. Instead of discussing it I prefer to take up the main principles at issue.

I did tell you in 1901 that the mechanism by which your surfaces were warped was original with yourselves. This I adhere to, but it does not follow that it covers the general principle of warping or twisting wings; the proposals for doing this being ancient. You know, of course, what Pettigrew and Marey said about it. Please see my book, page 97 for what D'Esterno said of the laws of flight; the 3d being torsion of the wings and the 6th being torsion of the tail. Also, page 106, Le Bris, rotary motion of the front edge of the wings. The original sources of information are indicated in foot notes. I did not explain the mechanism because I had not the data.

When I gave you a copy of the Mouillard patent in 1901 I think I called your attention to his method of twisting the rear of the wings. If the courts will decide that the purpose and results were entirely different and that you were the first to conceive the twisting of the wings, so much the better for you, but my judgment is that you will be restricted to the particular method by which you do it. Therefore it was that I told you in New York that you were making a mistake by abstaining from prize winning contests while public curiousity is yet so keen, and by bringing suits to prevent others from doing so. This is still my opinion and I am afraid, my friend, that your usually sound judgment has been warped by the desire for great wealth.

If, as I infer from your letter, my opinions form a greivance in your mind, I am sorry, but this brings me to say that I also have a little greivance against you.

In your speech at the Boston dinner, January 12", you began by saying that I "turned up" at your shop in Dayton in 1901 and that you then invited me to your camp. This conveyed the impression that I thrust myself upon you at that time and it omitted to state that you were the first to write to me in 1900, asking for information which was gladly furnished, that many letters passed between us, and that both in 1900 and 1901 you had written me to invite me to visit you, before I "turned up" in 1901. This, coming subsequently to some somewhat disparaging remarks concerning the helpfulness I may have been to you, attributed to you by a number of French papers, which I, of course, disregarded as newspaper talk, has grated upon me ever since that dinner and I hope that, in future, you will not give out the impression that I was the first to seek your acquaintance, or pay me left handed compliments, such as saying that "sometimes an experienced person's advice was of great value to younger men.

Yours truly

O. Chanute

P. S. The statement that warping in connection with the turning of the rudder was patented in 1901 was not from me. The reporter must have gotten this elsewhere.

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[illegible]

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[Correspondence of Octave Chanute: